TechDebate :: Dictate the mobile device or let the user decide? **PAGE 24**

NETWORKWORLD

THE CONNECTED ENTERPRISE ≡ JUNE 18, 2012

NETWORK ARCHITECTURE SPECIAL FOCUS

What are the killer apps for OpenFlow, SDNs?

BY JIM DUFFY

WITH THEIR ability to decouple network control from the physical infrastructure, OpenFlow and software-defined networks have been touted as the Next Big Thing in networking. They've been pitched as a way for cloud service providers and webscale companies like Google, Facebook and Yahoo to ease or automate network configuration and reconfiguration, and quickly add more functionality without manually touching each and every switch or router in the network.

Such companies can use OpenFlow and SDNs to reroute traffic, balance traffic loads, provide bandwidth on demand for peak requirements, execute policies to scale and segregate the networks of different data center or cloud tenants, and connect subscribers to content and services.

OpenFlow and SDNs have also been coronated as "Cisco Killers" due to the ability to abstract network configuration and extensibility from vendor-specific hardware and software commands, ostensibly relegating Cisco switches to Just Another Device status in a network and freeing customers from vendor lock-in. But Cisco just announced its own programmability initiative through its Cisco ONE architecture and onePK software development kit (see related story) and Insieme Networks

▶ *See* **SDN,** *page 10*

Cisco fires back with its own SDN

BY JIM DUFFY

SAN DIEGO — At long last, the wait — and suspense — is over. Or is it just beginning?

Cisco last week rolled out its vision and architecture for instilling programmability throughout a Cisco network — a blueprint the company says goes far beyond the OpenFlow and software-defined networking (SDN) schemes most competitors are proposing.

But with Cisco's vast installed base entrenched in doing things the way they've been done for decades, it's unclear how the technology will roll out. And rather than making an immediate difference, Cisco will

▶ *See* **Cisco,** *page 12*

Hit the **ROAD, BEACH** or the **HOTEL** with these outstanding outdoor gadgets.

By Keith Shaw

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REDEFINE DATA CENTER EXPECTATIONS— HP PROLIANT GEN8 SERVERS POWERED BY INTEL®.

See page 2

EXECUTIVE VIEWPOINT

Tim Golden

RESIDENT CHIEF TECHNOLOGY OFFICER FOR THE AMERICAS INDUSTRY STANDARD SERVER BUSINESS AT HEWLETT-PACKARD

In this role, he acts as the primary liaison between HP's customers and its ProLiant platform development teams. With 30 years of industry experience at HP, Compaq, Dell, and Apple, Tim brings a comprehensive and thorough understanding of technology trends and emerging product opportunities and has developed a unique ability to convey complex technical advantages into practical business benefits.

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Autonomics in IT

Next-Gen Servers Stress Intelligence and Automation

Hewlett-Packard has been assessing what trends like virtualization and cloud computing mean to its customers. We spoke with HP executive Tim Golden about the demands such trends place on application servers, and how HP has embedded intelligence and increased automation in its next-generation platforms in response.

What types of manual IT tasks can be automated?

Servers need to be more innovative, more intelligent and more self-sufficient given that 51 percent of server outages are linked to human intervention or error. For instance, what if we could, through clever engineering, fix problems that servers or server administrators might otherwise trip up on? One example involves monitoring for multi-bit errors in memory. If we can identify a 2-bit memory error we can automatically fix it on the fly without interruption of service. Another example is an LED light scheme on the hard-disk drive carrier that is designed to not only convey general health status, but also visually identify and isolate failed drives from good drives within RAID sets. That eliminates another relatively common human error.

> We're seeing 6 times performance gains compared to previous-generation servers.

How can server performance improve to meet the demands of enterprise applications, virtualization, and cloud computing?

One way is by addressing the imbalance that exists between processors, memory and storage. Over the last five to six years, storage performance hasn't kept pace with the performance advances we've seen in multicore processors and in DDR memory. One example of how we've addressed this performance gap is by fine-tuning the algorithms associated with solid-state drives and our new Smart Array controllers. Through such methods, we're seeing 6 times performance gains compared to previous-generation servers.

When looking to reduce energy costs, is it practical to consider higher-performance servers?

It makes perfect sense. With the new-generation platforms running the newest advanced processors, we're seeing performance gains upwards of 50 to 200 percent depending on the workloads. And thanks to the energy-saving techniques we've implemented, we're delivering as much as 70 percent more compute per watt than even our last generation, which was a quantum leap over earlier generations.

Doesn't the increased complexity make next-gen servers more difficult to service?

No; we've introduced many features to make them easier and faster to service. We've also done many things to make them more reliable. That includes equipping servers with an Active Health System that monitors 1,600 different health and configuration parameters 24 hours per day, 365 days per year. That information is stored for one year, and can be used to recover much faster from any problems that do occur. Product engineers can also build more reliable servers by looking at the correlation between component failures and configuration data.

It sounds as though HP committed significant resources to creating the ProLiant Gen8 portfolio.

It was a 2.5-year development effort, with a $300 million budget. We now have some 917 patents that are either granted or pending related to Gen8 and its immediate infrastructure. There are no fewer than 150 unique features on Gen8 servers that didn't exist in our previous generation. If that doesn't address escalating server demands, I don't know what will. ■

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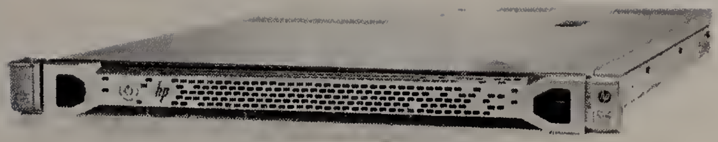

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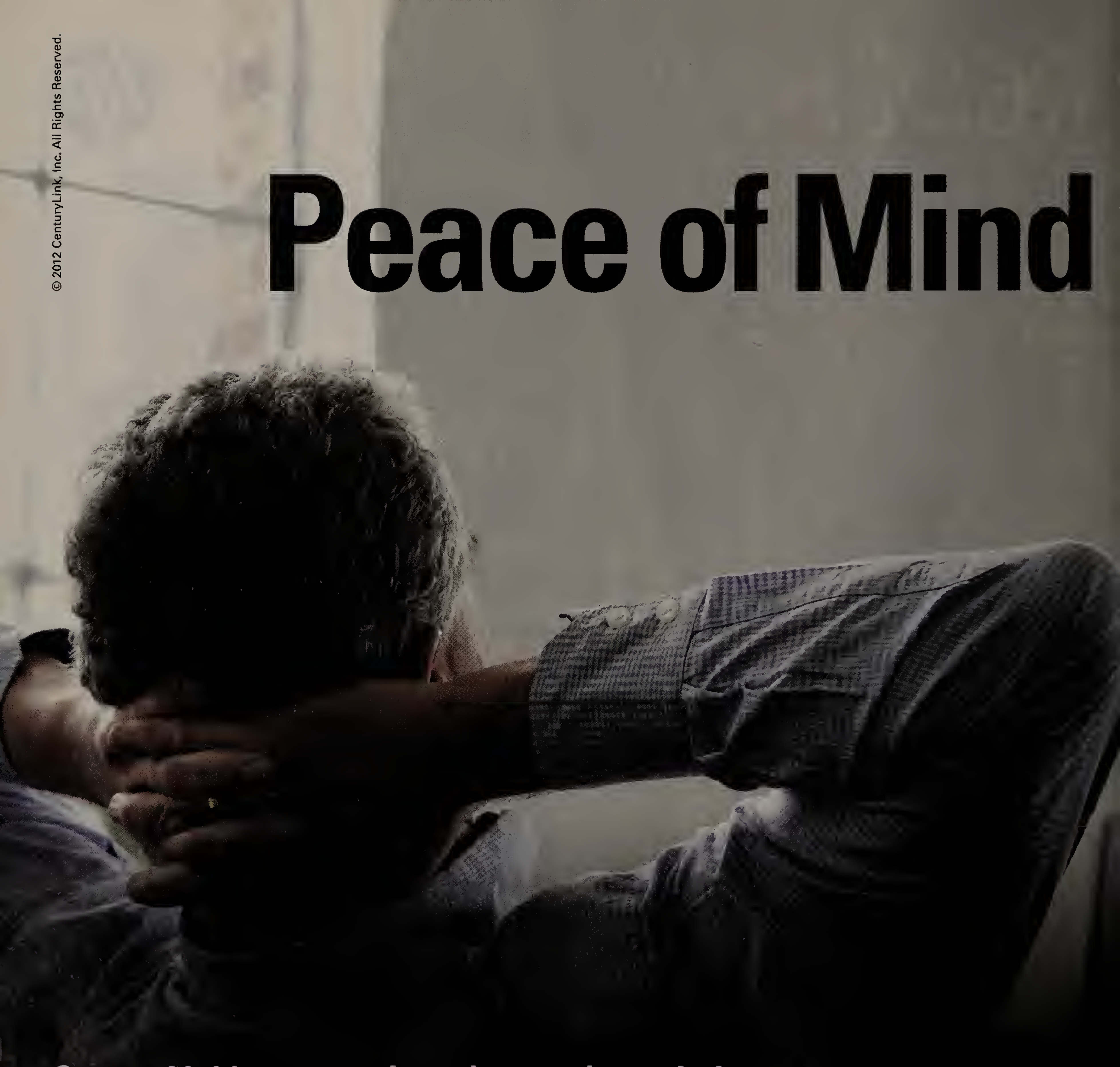

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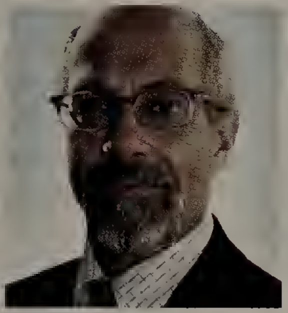
FROM THE EDITOR | JOHN DIX

SDN has Cisco jumping

You can gauge the promise of an emerging technology by the reaction of the biggest legacy player potentially threatened by the new arrival. It walks a fine line between jumping in too quickly and sanctioning a nascent movement that may not otherwise get off the ground, and reacting too slowly and losing advantage to fleet-footed upstarts.



Software-defined networking, then, shows great promise, because Cisco last week showed its hand with the introduction of an official SDN architecture called the Cisco Open Network Environment, or Cisco ONE (not to be confused with Sun ONE, the Open Net Environment once popularized by Sun).

Another small sign of the SDN promise: If you Google "software defined networking," "OpenFlow" or even "OpenFlow Networking Foundation," the ad that pops up above the search results is sponsored by Cisco. The company, apparently, views SDN as a real threat.

And well it should. In SDNs the control plane is separated from the data plane and network control handed off to servers, diminishing the role/value of the packet-handling equipment (OpenFlow is a new protocol standard for communicating control instructions).

With the ONE architecture, Cisco seems to be stealing a page from Microsoft's "embrace, extend, extinguish" playbook, by, as Jim Duffy reports, "opening up areas above and below the control and forwarding planes addressed by OpenFlow. This allows customers to program the network using a variety of protocols — not just OpenFlow — and further customize it according to their usage patterns and deployment models" (see "Cisco fires back with its own SDN," page 1).

SDN developments are starting to boil more quickly than could have been anticipated even six months ago, as Duffy reports in another piece in this issue (see "What are the killer apps for OpenFlow, SDNs?" page 1).

Need is being driven by a number of issues, including limitations of VLANs as companies build out private clouds, according to Kyle Forster, co-founder of Big Switch Networks. That sentiment is echoed by Saar Gillai, CTO of HP Networking, who says that SDNs make it easier to build networks where each application "feels like it has its own network."

Why easier? Because SDNs centralize control and eliminate the need to touch hundreds of devices to effect change, the bugaboo that limits network customization today, says Karl May, CEO of Vello Systems, a maker of OpenFlow and SDN cloud switches.

Then there is the promise on the wide-area side. How would you like to increase link utilization from the 30% to 40% common today to close to 100%, the level Google reports it is getting with its new SDN/OpenFlow backbone (see Q&A at tinyurl.com/bnraxbs)?

No wonder Cisco is taking SDN/OpenFlow seriously. The promise is hard to ignore.

John A. Dix

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peersay

SDN is the future of networking

I SEE THE need for routing protocols to evolve — or "revolve" might be a better term. Fact is, traditional routing only takes a small amount of information about what is going on in the network. Using IP SLA and markings to decide path selection outbound and (more importantly) inbound for true load balancing and not just a load share (Re: "Cisco ends the SDN suspense"; tinyurl.com/c62zw7y).

Computers can make intelligent decisions about patch selection based on processing the collected information, creating conditions/thresholds, and acting on path based on available bandwidth, DSCP Marking, IP source dest, etc.

I will be interested in how the market plays out and how Cisco sees itself a fit. SDN is the future of networking and will have a quick adoption rate.

Marc Edwards

Cius' demise: Saw it coming

FIGURED AS MUCH. Releasing a device that was marketed as enterprise-only and matching markup (Re: "Chambers: We should have killed Cisco Cius earlier"; tinyurl.com/84eaxtd).

I remember my vendor partner trying to convince me that the reason for the high pricing was because it was a multifaceted device capable of outperforming the current devices. I wanted to see a phenomenal device, and this was not it.

Sandoval Jones

> This is actually the second wave of the "consumerization" of the enterprise.

Mac II's place in NASA history

GLAD TO SEE some credit for the technology advancements that Apple led the way with. The II series gave the Mac its break in the NASA world (Re: "The Macintosh II celebrates its 25th anniversary"; tinyurl.com/cdd9zev).

On my first NASA project, the Advanced Solid Rocket Motor program, I took my first "inside tour" of Marshall Space Flight Center. To my surprise, the first project planning chart I saw was done on a Mac II. The entire program design for the cutting-edge robotic cell manufacturing and refurbish center (a $2 billion project) was conceived, spec'd and designed on Mac II series machines. The publish and subscribe features of Mac OS made the tremendous spec-writing task possible and consistent. I even did a demonstration-of-concept for 100% electronic work procedures with reference graphics and electronic sign-off in two weeks on a nifty little program called HyperCard. We could not have done our job without the Mac SE30 and Mac II series.

Joe Hodge III

It's Apple's turn in the enterprise

THIS IS ACTUALLY the second wave of the "consumerization" of the enterprise. The first was in the mid-'90s when Microsoft-based PCs displaced IBM mainframes and terminals. This time it's Apple's turn, first with the iPhone and iPad and soon with the desktop PCs (Re: "Gartner: Apple Macs invading the Windows PC-dominated enterprise"; tinyurl.com/6ruf87h).

GC

Software transition to IPv6 vital

THE TECHNOLOGY IS there, it's doable, but everyone is taking that "let's wait and see" approach, so it's not going anywhere (Re: "Launch event drives IPv6 traffic to all-time high"; tinyurl.com/c3hksr3).

The biggest hurdle, as I see it, isn't about network transition but rather software transition. CIOs crunching numbers, their priorities shifting from making IT work to making IT affordable, results in applications not being IPv6-ready so the transition can't take place.

Pinkie

Big-data navigation takes genius

JUST IN TIME when big data is trending (Re: "What it takes to be a data scientist"; tinyurl.com/brnvz3t).

We have a huge clutter of data right now and it takes a genius to filter what's important from what isn't. So the question is, who is really qualified to be one? I don't think certifications matter much, and having an MBA can be a plus, but that doesn't mean you have what it really takes to see what others can't.

seventhman

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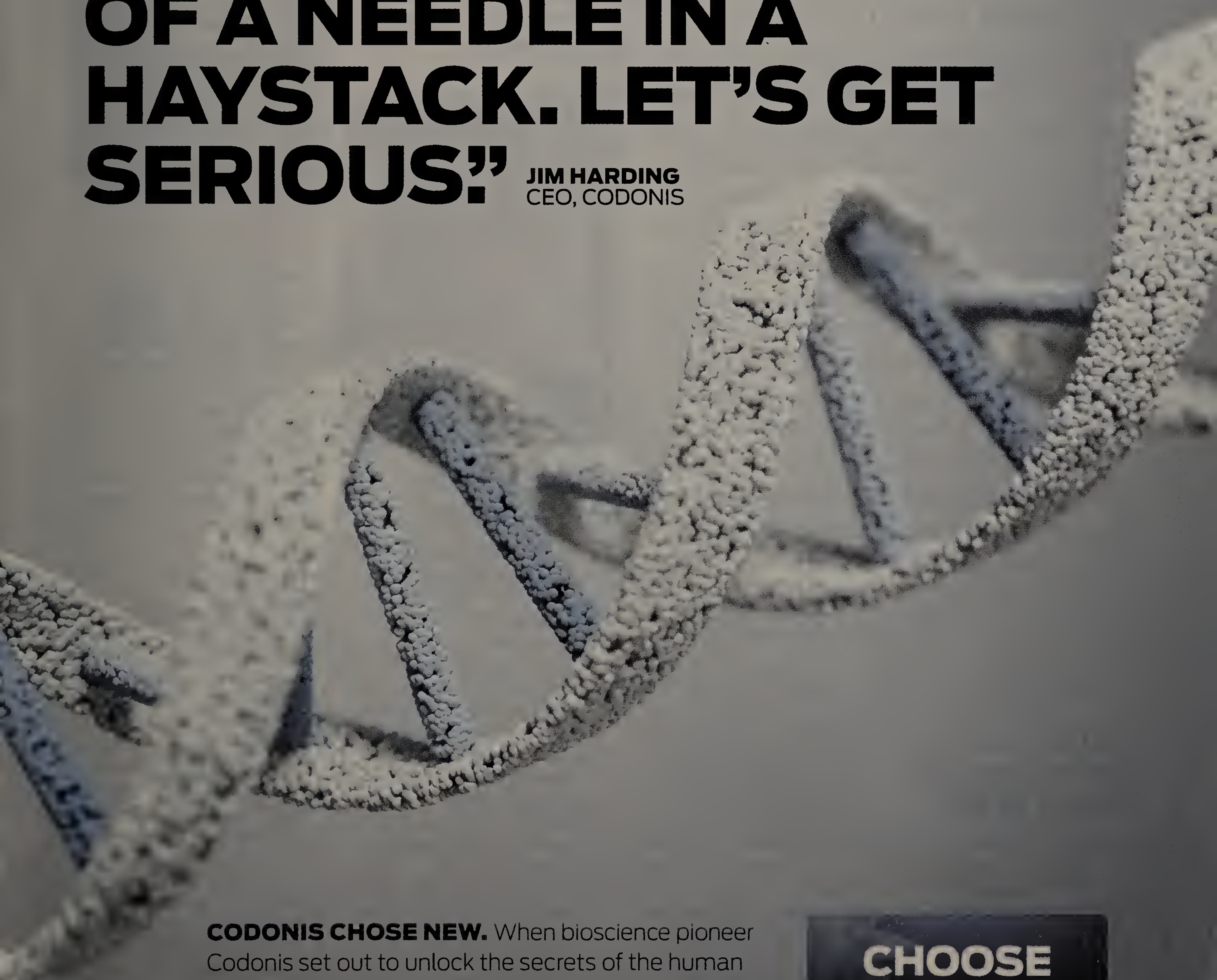
“I’M TRYING TO FIND THE DNA EQUIVALENT OF A NEEDLE IN A HAYSTACK. LET’S GET SERIOUS.”

JIM HARDING
CEO, CODONIS



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Dibs on new TLDs

SEVEN COMPANIES WANT news, eight want music or a movie, and seven want love. Four want pizza, but none of them make it. Only two want sex, and one even wants a unicorn. Those names figure among the 1,930 applications to create and operate new generic top-level domains (gTLDs) revealed last week by ICANN. By allowing the creation of many new TLDs, ICANN has said it hopes to benefit consumers by creating more competition among registries. Critics, though, say the move is likely to create more confusion and cost as companies have to defend their trademarks in many more domains than before. ICANN is doing its best to limit any confusion among the new gTLDs, said ICANN CEO Rod Beckstrom. "None of them will enter the Internet until they have undergone a rigorous examination," he said. The application fee for each gTLD is $185,000, and ICANN has collected around $352 million. Most of that will be spent on processing the applications, Beckstrom said. "This is a serious technical operation," he said. "It's not the same as applying for a second-level domain." ***tinyurl.com/84xlfak***

Juniper guns for Cisco again with smaller QFabric

JUNIPER LAST week unveiled a version of its fabric switches for mid-sized data centers and also increased the scalability of its core Ethernet switches. The extensions to Juniper's QFabric and EX8200 switches are designed to broaden the addressable market for the devices while allowing customers to scale their networks and eliminate switching tiers. QFabric is intended to enable users to build low latency, single-tier fabrics for data centers where every resource is only one-hop away. Mid-sized data centers and satellite facilities can now implement these designs with the new QFX3000-M. The QFX3000-M includes a fixed configuration interconnect, the QFX3600-I, with 16 40Gbps ports. It also includes a 40G top-of-rack switch, or node, called the QFX3600, also with 16 40G ports in 1 RU. ***tinyurl.com/7n3adac***

Obama order targets cost of broadband deployments

U.S. PRESIDENT Barack Obama last week signed an executive order intended to make it less expensive for broadband providers to install lines and equipment on federal lands and federal roads. The executive order will require federal agencies to adopt uniform rules for allowing broadband carriers to build networks on and through federal property, and it requires the U.S. Department of Transportation to help carriers time their broadband deployments at the same time that streets are under construction. This so-called "dig once" order could make broadband construction on federal lands up to 90% cheaper, said Tom Kalil, deputy director for policy at the White House Office of Science and Technology Policy. The White House also announced the US Ignite program, which will bring software developers from government and industry together with representatives of communities, schools, hospitals and other organizations to work on new applications for ultra-high-speed broadband. ***tinyurl.com/822zyhu***

IT VIDEO

Synching smartphones with ovens

A Japanese manufacturer has handsets that can talk to ovens and rice cookers. ***htinyurl.com/7eej9no***

Dell eyes $2 billion cuts

DELL WANTS to cut $2 billion in costs over the next three years as the company moves a larger part of the business toward the enterprise to increase profitability. The cost cuts will come in a number of areas, including standardizing PC and server system configurations, moving operations to more affordable geographic areas, and making the supply chain more efficient, said CEO Michael Dell. The company will reinvest some of the savings into its enterprise business, which includes software servers, storage, services and networking. While the focus is on data centers, the company is not abandoning the PC business, Dell said. The company is trying to keep the focus on higher-margin products, like XPS PCs, while continuing to reduce the complexity of PC products. ***tinyurl.com/7pr99an***

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▶ **SDN,** *from page 1*

is building a line of programmable switches for the company.

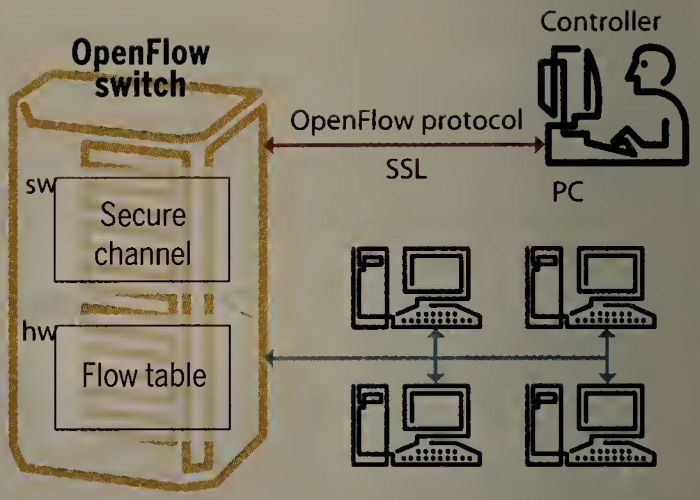
So what's the OpenFlow/SDN killer app for the enterprise?

Actually, there are several, vendors in the OpenFlow/SDN/network virtualization arena say.

"Our primary focus is the enterprise market," says Kyle Forster, co-founder of Big Switch Networks, a maker of OpenFlow controllers for SDNs. Big financial and technology companies are trailblazers with OpenFlow, he says.

OpenFlow

An OpenFlow switch with the control plane separated from the switch itself and housed in an external controller. The flow table is controlled by the remote controller through the secure channel.



SOURCE: OPEN NETWORKING FOUNDATION

They are using it for network virtualization for private cloud build-outs to extend beyond the limits of virtual LANs, which top out at 4,096. Once those private clouds are implemented, enterprises then look for more business-critical applications for OpenFlow and SDNs, like data center interconnect, disaster recovery and granular security.

"There are all these requirements on the application for the private cloud 2.0 and that's where, on the network side, the VLAN architecture really starts to break," Forster says.

Even before enterprises implement private cloud, data center network virtualization is some low-hanging fruit for OpenFlow and SDNs, Forster says. Server virtualization across eight to 30 racks, with 200 to 2,000 VMs per rack, usually breaks the VLAN limit and opens up an opportunity for SDNs.

"That's the end of the all VLANs everywhere path," he says.

But OpenFlow and SDNs are not network virtualization, per se; they are network construction tools to facilitate network virtualization, which is really a "solution" built on top of an SDN foundation, says Martin Casado, co-founder and CTO of network virtualization startup Nicira.

Casado was also one of the chief developers of the OpenFlow protocol and API.

"The enterprise use case motivated the work that I did that became OpenFlow and grew into this SDN mania," Casado says. "Within the business enterprise, there has long been requirements for security, for isolation and for service interposition. How do you build an enterprise network that allows for security and isolation, with simplified operations and service interposition?"

Casado believes network virtualization brings these attributes to enterprise networks. But whether or not those virtualized networks are built using OpenFlow and SDNs is irrelevant to the user, he says.

"Traditionally, OpenFlow does not do network virtualization," Casado says. "All OpenFlow does is allow you to control switches and it may allow you to run different applications on the switch. But it doesn't provide you the ability to create a virtual network that's topology independent that supports L2 and L3. I don't know of any OpenFlow solution that does this.

"SDN is just a tool set," he continues. "Network virtualization is an actual solution. It's a product that you sell. And it solves many of these problems. It will decouple the security policy from the physical topology. It natively supports mobility. It allows for dynamic service interposition. It natively supports isolation. Whether or not you build network virtualization with SDN is an independent question. You can certainly do it without using SDN; I just question whether you'll have the guarantees you need on the scale you'll need. My sense is, without SDN, you can't do virtualization at scale with guarantees. But the solution that will change the operational model of the enterprise is virtualization."

HP agrees with that perspective from Nicira: OpenFlow and SDNs are just tools to enable the real value of programmability, which are applications like network virtualization and granular policies for different use cases — like managing the bring-your-own-device (BYOD) trend in enterprises. HP earlier this year rolled out 16 OpenFlow-enabled switches for the enterprises that interoperate with controllers from vendors Big Switch, NEC and NTT, as well as open source controllers like NoX, Beacon, Floodlight, and Trema.

HP also demonstrated its Virtual Application Network orchestration capabilities at Interop in May.

"SDN is a capability and then there are the network applications that run on top of it: network virtualization, BYOD policy, or things of that nature which is what people are actually using," says Saar Gillai, CTO of HP Networking. "In network virtualization, SDN can help you in doing some of the overlay tunneling but there's other things you need to provide to create that capability. SDN is a technology that can be leveraged to provide some unique applications but in and of itself it's just a technology."

OpenFlow and SDN's real value comes from what it enables. Network virtualization allows enterprises to share a common physical infrastructure with different attributes among multiple organizations, says Karl May, CEO of Vello Systems, a maker of OpenFlow and SDN cloud switches for enterprises.

With SDNs, customers build an abstraction of the physical infrastructure to use it for a combination of production and test networks.

"That is greatly undersold when people talk about SDNs," May says. "That's a very valuable element of the SDN architecture."

The programmability afforded by OpenFlow and SDNs enables applications to define the behavior of the network and provides them with a level of deterministic performance, May says. This is appealing to enterprise customers with very high performance computing or big data needs, he says.

"The very first thing that they're asking about is, 'Tell me how I can customize your product for my applications,'" May says. "'I have very limited ability to customize when I make changes to my network or upgrade my firewall — that forces me to touch all 300, 400, 500 or 1,000 of my switches.' Some of the operational ease that an SDN architecture provides is beginning to become one of the more significant drivers of interest in the enterprise."

Much of that operational ease comes from automation, another key benefit of SDNs. Enterprise IT staffs are resource constrained, in time, manpower and money. The programmability aspects of OpenFlow and SDNs help automate procedures that fit into those constraints, says Don Clark, director of business

▶ *See* **SDN,** *page 12*

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▶ **CISCO,** *from page 1*

release Cisco ONE in phases, meaning customers will implement it in phases — so its uptake and impact may be barely detectable to anyone other than those deploying it.

Cisco's strategy is called the Open Network Environment, or Cisco ONE, previously referred to as Cisco OPEN or COPE. Cisco ONE is designed to enable Cisco networks to be flexible and customizable to meet the needs of newer networking and IT trends such as cloud, mobility, social networking and video.

Cisco unveiled the architecture at the Cisco Live user conference here last week.

Cisco ONE includes APIs, agents and controllers, and overlay network technologies designed to make each layer of a network — from the transport layer up through the management and orchestration layers — programmable, in order to make the network adaptable and extensible to changing needs.

This differs, Cisco says, from more commonplace approaches to SDNs in which the control plane is decoupled from the forwarding plane and OpenFlow is used as an API, agent and protocol to command switches from an external controller.

Cisco says Cisco ONE complements this approach by opening up areas above and below the control and forwarding planes addressed by OpenFlow. This allows customers to program the network using a variety of protocols — not just OpenFlow — and further customize it according to their usage patterns and deployment models.

Cisco ONE includes the One Platform Kit (onePK) which provides APIs for developers across Cisco's routing and switching operating systems: IOS, IOS-XR and NX-OS. Cisco onePK support will roll out on Cisco platforms in phases, with initial support on the ASR 1000 and ISR G2 routers. The Cloud Connector software that Cisco unveiled this week for those routers supports onePK APIs for third-party development, the company says.

Deployment models for onePK will differ depending on the customer — enterprise, service provider, cloud service provider, data center and academia/research — so once onePK is fully implemented and installed in Cisco's customer base, will anyone really notice or care if it's SDN or not? And in the time it takes for it to infiltrate Cisco's base, will there really be a seismic shift in the industry toward non-Cisco OpenFlow/SDN/programmability/network virtualization solutions?

Trust and familiarity and non-disruption may be on Cisco's side here.

"Because of the installed base and large set of requirements, it takes learning on Cisco's part to realize what they need," said David Yen, senior vice president and general manager of Cisco's Data Center Group. "We're not making this announcement for marketing's sake and to get visibility; we need to support and maintain customer issues."

"OnePK is a cultural transition," says Shashi Kiran, senior director of Data Center/Virtualization and Enterprise Switching at Cisco. "Customers and partners need to be comfortable, we need to be providing proof of concepts."

The other big unknown is the spin-in Cisco has funded, Insieme Networks, which is believed to be developing the next generation of Cisco's Nexus switches with programmable onePK APIs baked in.

Cisco officials at Cisco Live last week remained tight-lipped on Insieme and how and where it fits in with Cisco ONE. If its focus is on massively scalable data centers and/or cloud service providers, then it could be developing onePK switches for network flow management, automated provisioning and programmable overlay networks for the multi-tenancy.

Meanwhile, Cisco ONE also includes proof-of-concept controller software and a proof-of-concept OpenFlow v1.0 agent for its Catalyst 3750-X and 3560-X switches for SDN research. Cisco last fall promised to support OpenFlow on its Nexus data center switches but found in the ensuing months that OpenFlow has less appeal in the data center and more in academia and research, company officials said.

Beta trials and phased general availability are scheduled to begin in Q4. ■

▶ **SDN,** *from page 10*

development for the IT Platform Group at NEC America.

NEC's ProgrammableFlow line of switches are based on OpenFlow.

"The networking and IT staff is having to do more with less resources," Clark says. "And especially as cloud services spin out, the networking staff in a traditional networking model is overloaded with service requests. So enterprises are really looking to automate some of the things that today are manually configured.

"Automation brings benefit of not having to develop all of these applications internally," Clark says. "Balancing workloads across data centers, today that's a lot of configuration down on each individual switch. Providing an automated solution that allows them to do that much more dynamically is the kind of thing that allows [enterprise IT] staff to move away from manual configuration and more toward policy."

Weren't VLANs, which were all the rage in networking a decade ago, supposed to virtualize and automate and segment and isolate applications and traffic over a shared infrastructure? They did, but that technology is old now and its limitations are now showing.

"VLANs are difficult to configure and are limited in scope," says HP's Gillai. "We're taking it to the next level with a full virtualized network, with an overlay or segment for a particular application or use case which is isolated from anything else that is going on. Each application or use 'feels' like it has its own network. And it simplifies network management and resource allocation. We're now managing resource pools" instead of individual routers and switches.

"VLANs are very low-level," says Nicira's Casado. "Even if you had VLANs as low-level mechanisms, you would still need someone to update it, configure it, and it wouldn't scale because you'd have to trunk everything everywhere; you couldn't go over an L3 boundary."

Newer technologies like Virtual Extensible LAN (VXLAN) and Network Virtualization Generic Routing and Encapsulation (NVGRE) are also intended to virtualize networks and scale VLANs. Cisco, VMware and Arista are co-authors of VXLAN, while Microsoft, Dell and Intel back NVGRE.

In the meantime, enterprises want to be able to customize their networks but also make them adaptable, something they are finding difficult to do with closed homegrown scripting and vendor-specific attributes for configuration and extensibility.

"Large enterprises are looking at this as a way to get back on the standards track and not be tied to homegrown systems," says HP's Gillai. "Because of the need to have very granular control of policy in their systems, they've built whole worlds of scripted systems to provide that with SDN you'll be able to do in a much more elegant fashion." ■

GO ONLINE

To read how Google's software-defined/OpenFlow backbone drives WAN links to 100% utilization. tinyurl.com/bnraxbs

Google Principal Engineer Amin Vahdat

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Microsoft customers see benefits of cloud OS; Windows 8, not so much

Cloud's-eye view of the sold-out crowd at TechEd 2012. Below, hands-on at the lab.

BY TIM GREENE

ORLANDO, Fla. — Microsoft wants its customers to know two things: that Windows 8 is ready for the enterprise and that it has products and services for creating flexible hybrid cloud environments — a cloud OS.

Those are the two big messages the company pushed at last week's TechEd North America 2012 conference, where some parts of those ideas resonated with customers but others were met with skepticism.

"Move development to the cloud? That's a pretty good idea," said Andre Beaupre, president of Groupe ABI, a data center consultancy in Montreal. He was embracing Microsoft's spin that Windows Server 2012 plus its upgraded cloud offering, Azure, equals a cloud operating system that can boost capacity on the fly as needed for developers.

Microsoft also says its cloud OS can front-end applications while keeping data those apps use safe at corporate sites, and that it supports moving entire virtual servers — including Linux servers — in and out of Azure.

As for Windows 8 being ready, its radical shift toward touch and Metro-style, graphics-heavy apps had customers at the conference wondering whether the end users they serve will see enough value to climb the learning curve for the new OS. "I don't know how it's going to be accepted," said Steve Williamson, a sys/ops manager at Santa Fe College in Gainesville, Fla., with about 22,500 students, faculty and staff. "I'll probably wait until I get some internal push for it."

Microsoft trumpeted its two big pushes at 90-minute keynote addresses attended by most of the 8,600 customers the company says attended its annual conference, which was celebrating its 20th year.

The cloud OS framework is built around Windows Server 2012 and Azure, both of which have significant new features.

The OS analogy goes like this: Operating systems manage hardware and are the platform on which applications run. A cloud OS, then, manages the hardware at the scale of a data center and provides the varying platforms on which applications run.

Microsoft is saying Windows Server can manage the physical resources, including pulling them together from a pool of whatever resources are available — in traditional data centers, private clouds and public clouds.

Server 2012 is more powerful, said Satya Nadella, president of Microsoft's server and tools business. The server, due out later this year, sports up to 320 logical processors per server and 4TB of memory, and up to 64 virtual processors and 1TB of memory per virtual machine. These big numbers, plus the fact that the final preliminary version of Server 2012 is powering the production network for the Bing search engine, indicate a significant upgrade to and stability of the platform, he said.

As for Azure, it recently added support for virtual machines — including some flavors of Linux — making Azure an infrastructure-as-a-service provider, not just a platform-as-a-service provider. This ability to shift entire virtual machines in and out of the cloud under the control of Windows Server 2012 is one upside of cloud OS, Nadella said.

Despite its potential, some customers are leery of the cloud OS. Putting sensitive applications and data in the cloud still makes him nervous, said Tomasz Tomala, a database administrator with DeLaval Operations, an international maker of dairy industry machinery. "Pushing data outside our sites in some cases could be dangerous for me," he said.

The answer to that, said Nadella, is moving application front ends to the cloud but keeping the data they use in private facilities, and Tomala ceded that might work. "The front end could go to the cloud, no problem," he said.

As for Windows 8, it has to clear a high bar set for it during a keynote by Antoine Leblond, Microsoft's corporate vice president of Windows Web Services. He called the OS "enterprise-ready by design" and "a better OS than Windows 7" — something customers feel they have little proof of right now.

In his pitch for Windows 8, Leblond highlighted the touch features of the operating system and how consumers are shifting away from desktops to laptops and tablets, both of which lend themselves to touch user interfaces. And, he noted, Windows 8 can support keyboard and mouse as well as Windows 7 applications. Users can opt for a traditional desktop interface over Metro as well.

The horizontal scrolling of the Start menu where apps are displayed as individual rectangles called "tiles" is too busy and made more so by "live tiles" that constantly update data about the app, said one application developer for an electric utility, who asked not to be named. "It felt like information overload."

He was fresh from a TechEd class on Web programming for Microsoft environments, and said he avoided sessions about programming for Windows 8 because he's unsure if his company will move to the OS soon.

But Chad Hester, a software architect for Hobby Lobby Stores, craft and hobby retailers with 516 stores in 42 states, had just attended a Windows 8 programming class, and was impressed.

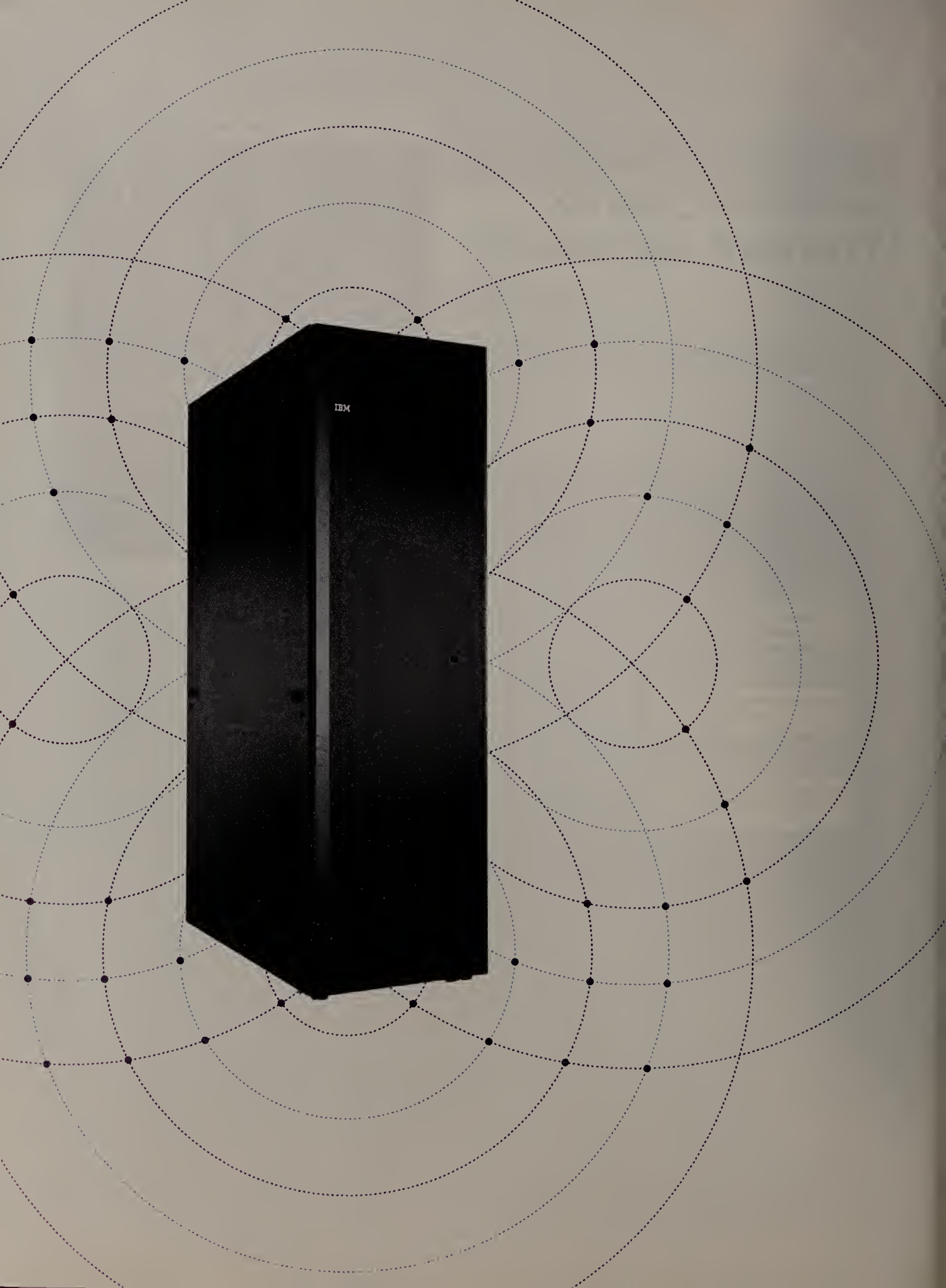
He liked the idea of live tiles and could imagine a Windows 8 application that tallies the day's sales in real time and displays the current total on a live tile so the store manager can easily find the information.

Based on what he knows about Windows 8, he suspected developing for it will be faster than developing for Apple's iOS. The company spent 12 weeks developing an iPhone app for its customers, and Hester thought that with Windows 8 a similar app could be developed in eight.

Jay Wazurkar, an architect for Green Mountain Coffee Roasters, was upbeat about the OS.

He said he likes new features supported by Windows 8 such as touch and linking applications so they can share data. "It's an open concept that treats data so it can be consumed through other channels," he said.

"You can't not go to Windows 8," he said. "Eventually we have to." ■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Juniper guns for Cisco with smaller QFabric

BY JIM DUFFY

JUNIPER LAST week unveiled a version of its fabric switches for midsized data centers and also increased the scalability of its core Ethernet switches.

The extensions to Juniper's QFabric and EX8200 switches are designed to broaden the addressable market for the devices while allowing customers to scale their networks and eliminate switching tiers. QFabric, for instance, is intended to enable users to build low latency, single-tier fabrics for data centers where each switch feels only one-hop away.

Midsized data centers and satellite facilities can now implement these designs with the new QFX3000-M. The QFX3000-M includes a fixed configuration interconnect, the QFX3600-I, with 16 40Gbps ports. It also includes a 40G top-of-rack switch, or node, called the QFX3600, also with 16 40G ports in 1 RU. The new system can also use the existing QFX3500 10G nodes that have been shipping since September 2011, and the QFX3600 can also serve as the node for the existing QFX3000-G Interconnect.

Juniper says customers can manage oversubscription from access to interconnect by choosing how many ports they configure as server access vs. uplinks to the interconnect. This allows the following options on QFX3000-G or QFX3000-M with the QFX3600 as the node: 6:1, 3:1, 1:1 for 10G and also native 40G connectivity.

The QFX3000-M scales from 48 to 768 10G Ethernet ports with either the QFX3500 as the node or the QFX3600. The 40G ports on the QFX3600 can also be configured as 4x10G ports, Juniper says.

The existing QFX3000-G scales to 6,144 10G ports, Juniper says.

The QFX3000-M features three microseconds of latency, enabling server-to-server traffic speed equivalent to streaming 1,000 HD movies a second, Juniper says. Juniper also says the QFX3000-M offers four times the performance, in 63% less rack space, using 74% fewer cables and 57% less power than a fabric built with Cisco's Nexus 7000 switches and Nexus 2000 fabric extenders.

Juniper says it has 150 QFabric customers.

The EX8200 is designed for mixed environments of 10G and Gigabit Ethernet. Up to eight of the switches can be logically linked over distances of 80 kilometers using Juniper's Virtual Chassis technology.

Previously, only two EX8200 could be linked using Virtual Chassis.

This enhancement allows users to manage up to four core networks of two switches each as a single switch.

The QFX3600-I costs $50,000, not including 40G optics. The QFX3600 will be available as a 16-port 40G Ethernet top-of-rack switch in the second half of 2012. It costs $40,000. ■

VMware virtualizing Hadoop via Project Serengeti

BY BRANDON BUTLER

VMWARE LAST week announced Project Serengeti, open source code that optimizes Hadoop for use in VMware virtualized environments.

Bringing cloud-like benefits to the leading big data analytics tool will make it faster and easier to deploy and manage a variety of Hadoop distributions on VMware machines, company officials say.

"VMware has been working on cloud computing and virtualization for quite some time, and big data is one of the hottest trends in IT. Now, we're bringing those worlds together," says Fausto Ibarra, senior director of product management for VMware. "With these announcements, Hadoop can become a first-class client in IT infrastructures."

Hadoop, which is an open source software framework for managing massive amounts of unstructured data, is used by some of the top IT shops in the world, such as Yahoo and Facebook, but is still in its early stages of adoption across most mid- to large-size enterprises. Experts say VMware's announcement today, along with other Hadoop-related news this week, further legitimizes the Hadoop market and could spur more companies to begin exploring the potential value of big data analytics.

With Project Serengeti, VMware has optimized Hadoop to run on virtualized infrastructure, compared to physical servers which do not run a hypervisor. While Hadoop clusters are currently running on virtualized machines in some instances, VMware says supporting Hadoop clusters on its series of market-leading virtualization products will open Hadoop up to be more easily deployed in enterprise settings. Using virtualized servers allows additional virtual machines to be deployed quickly and scale elastically while ensuring high availability and optimal hardware utilization, the company says.

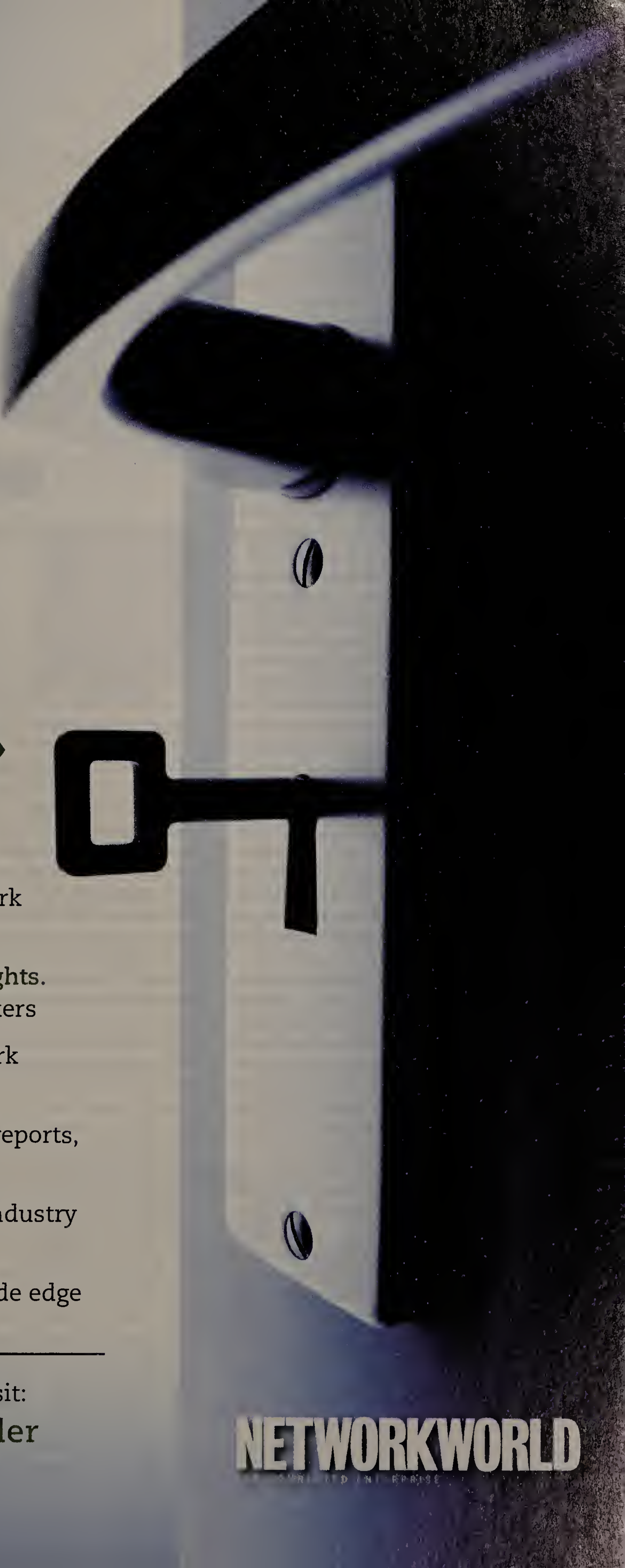
Hadoop support is initially programmed to run on VMware vSphere virtualization products and it is compatible with Hadoop distributions such as those from Cloudera, MapR, IBM and Greenplum. Ibarra says there will be continued advancement of Project Serengeti to extend support to new Hadoop distributions and feature sets.

Making Project Serengeti available free through Apache also continues a trend by VMware to embrace open standards. Its platform-as-as-service (PaaS) offering, Cloud Foundry, for example, is also open source. Ibarra says VMware wants Project Serengeti to be widely adopted within the Hadoop community and compatible with all the various Hadoop distributions, so open source was the way to go.

Project Serengeti is an important move to make Hadoop enterprise-friendly, says Tony Baer, an analyst at Ovum. "This will help Hadoop become more mainstream," he says. There are a variety of use cases where Hadoop could benefit from running in a virtualized environment, such as if an enterprise wants to experiment with a new feature on a data set, but not expose the entire cluster.

Ibarra says VMware officials have seen three major use cases for Hadoop among customers: One is in companies that are testing the platform and have less than 20 nodes or so. These customers, he says, are ideal for virtualized distributions of Hadoop because large new capital expenses will not be required if Hadoop can run on legacy vSphere private clouds.

A second customer set has an expanded use of Hadoop, up to 100 nodes or so, Ibarra says, and may be looking to take advantage of the dynamic elasticity Project Serengeti allows Hadoop to leverage. A third use case is for the early Hadoop adopters who are running hundreds of nodes and are looking for advanced uses. Almost any business today, he says, will find some use for Hadoop given the vast amounts of unstructured data produced through Web traffic that can be analyzed. ■



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NETWORKWORLD

Tech world preps to honor 'Father of Computer Science'

Alan Turing

BY JON GOLD

LISTENING TO the way people in the world of technology talk about Alan Turing, it's difficult to believe that the English computer scientist isn't more of a household name.

"The man challenged everyone's thinking," says Vint Cerf, Google's chief Internet evangelist, in an interview with *Network World*. "He was so early in the history of computing, and yet so incredibly visionary about it."

Cerf — who is president-elect of the Association for Computing Machinery (ACM) and general chair of that organization's effort to celebrate the upcoming 100th anniversary of Turing's birth on June 23 — says it's tough to overstate the importance of Turing's role in shaping the world of modern computing.

"Alan had such a broad impact on so many aspects of computer science," Cerf says. "The deep notion of computability is so fundamental to everything we do in computing."

"People . . . have done computing for thousands of years," says Moshe Vardi, a distinguished computer science professor at Rice University who is working closely with Cerf on the upcoming ACM celebrations. "But the theory of computing really started in the 20th century, and Turing is one of the foremost — if not the foremost — parents of the theory of computing."

Both Vardi and Cerf — who are influential figures in computer science in their own rights — cited the idea of computability, or the ability to solve a problem efficiently, as a foundational concept for the development of modern computers.

"Businesses don't even realize how much they rely on [the idea]," Vardi says. "Today, when you have people doing algorithmic trading on Wall Street, they are following in Turing's footsteps. . . . There is a line of development, each one following the other, that led from the question 'what is computable?' to the world you see around us today."

Who was Turing?

Alan Turing was born on June 23, 1912, in London. After studying at King's College, Cambridge, and becoming a fellow at the age of 22, he did some of his most important conceptual work in inventing what he called the "a-machine," better known to the world as the Turing machine. This hypothetical device —which reads symbols from a paper strip of theoretically infinite length and interprets them according to an inbuilt table of rules — is crucially important to the development of computational theory.

The work for which Turing is probably best known to the public, however, is his central role in cracking German military codes during World War II.

Turing's earlier research stood him in good stead at the ultra-secret Government Code and Cipher School, located at Bletchley Park. Along with contributing enormously to the war effort by providing detailed intelligence on German communications, his work at GCCS presaged the development of the rudimentary computers he would design after hostilities ended.

While he had already created a digital multiplier while at Princeton University before the war, the design of the Automated Computing Engine, or ACE, was to have far greater effects on the development of the computer — providing a basis for a whole generation of devices, including the Bendix G-15.

"The very first machine that I ever got to really program was called a Bendix G-15 computer," recalls Cerf.

Turing went on to make many other important advances in several fields. The Turing Test, which holds, broadly, that a machine which is indistinguishable from a human in normal conversation can be said to have achieved artificial intelligence, is his work, as is a well-known hypothesis on pattern formation in biology.

His contributions, however, were cut short by his untimely death. Turing had been persecuted for his homosexuality by the British government, and agreed to undergo chemical castration rather than face jail on a charge of indecency in 1952. He was found dead, the victim of apparently self-inflicted cyanide poisoning, on June 8, 1954.

Former U.K. Prime Minister Gordon Brown recently issued an official apology to Turing in 2009.

Celebrations

Nevertheless, Turing's memory is the driving force behind a landmark celebration in the scientific and computing communities. While a Turing Award — "the Nobel Prize in computing," according to Vardi — has been handed out every year since 1966 by the ACM, this year's presentation, on June 16, will be different.

The group, Vardi says, is trying to bring all living Turing Award winners together in celebration of Alan Turing's life and work. The event will be held June 15-16 at the Palace Hotel in San Francisco.

He predicts that the group will have about 32 Turing Award winners on hand. In order to ensure that attendees have a chance to hear from all of the award winners, several panel discussions featuring multiple prize winners will be held.

The response has been well beyond what the ACM initially expected. Vardi says the group estimated it would get roughly 250 or 300 people to attend; there are now more than 1,000 attendees registered.

"We kept going to the hotel, 'We need more room! We need more room!'" he says.

Nor are the ACM's celebrations the only ones of their kind. The University of Manchester is planning its own conference for June 22-25, and a 100th birthday party will be held in Cambridge on June 16 at Turing's alma mater, King's College, among many more.

Part of the reason for the massive scope of the celebrations, according to Vardi, is the nature of the 100-year anniversary.

"Now, with the perspective of 100 years, we understand how important [Turing's work] was in a way that, even 20 years ago, we couldn't understand," he says. ■

TOOLS

Ripping DVDs and making websites mobile

Mark Gibbs' Gearhead

After all these years DVD ripping is, it seems, still a topic of mystery and experimentation. I've tried ripping DVDs many times with varying degrees of success, and today a friend on my favorite email list just raised the topic again: "What do people on this list use to rip a DVD to their hard drive so they can, for example, watch it on a laptop or a tablet? This was something I'd assumed would come up in a Google search, but I had a surprisingly hard time finding a solution."

This is exactly the problem I've found and I've yet to discover a simple generic solution.

Another friend on the same list recommended, in the not-free category, Anvsoft AnyDVD ($39.95), Nero Video 11 ($79.99) and Xilisoft Blu-Ray ($49.95). "Between these three tools [I can rip] any size, any content (even Blu-ray protected), [and from] any media (no matter how crappy). The one exception is that no matter how hard I try to convert files to put onto the SD card for the Wii, it won't play."

Yep, ripping DVDs is, after all these years, still a pain in the butt. If you have a solution that is free, or at least cheap, simple and reliable, the world is waiting to hear it. Send your suggestion to gearhead@gibbs.com.

On another note, everything, as I'm sure you've noticed, is "mobile" these days, and I've just found a new service that aims to convert websites into mobile sites automatically. The service, bMobilized, claims you can "Mobilize Your Site In Seconds" and, to a limited extent, it is right . . . except that if there's any structural complexity or fancy-schmancy JavaScript driving the layout the service struggles.

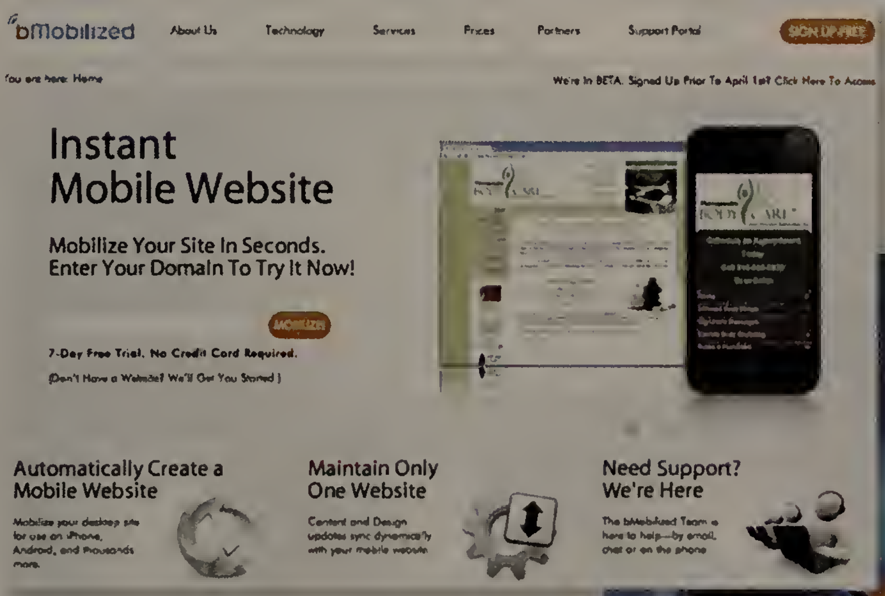
I tried it on a site I put together for my friends at the Fire Service Training Institute. The site is the Community Emergency Responses Team and, on the pages where JavaScript-driven tables are used to show the training schedules — for example, on the Santa Barbara County site — bMobilized struggled, occasionally barfed, didn't completely understand the structure of the pages, and didn't really have the tools to allow me to select which page areas needed to go where on the mobile site.

Once you have created a bMobilized version of your website, you merely add a block of JavaScript to your homepage. The JavaScript code performs the detection of mobile clients and redirects them to the mobile version.

All of that notwithstanding, the service is in beta and a little rough around the edges (it kept generating my favorite error message: "unknown error"), but it's a great idea for translating sites into a mobile version. That said, the reality is that for anything but the simplest of sites, the translation to mobile will never take "seconds."

Small-business pricing starts at a ridiculously low $5 per month, while "Professional" level, which adds a $199 setup fee where bMobilized sets up everything for you, costs a whopping $9 per month.

BMobilized gets a Gearhead rating of 3 out of 5 . . . and addressing the issues of it getting a better understanding of source site layout and better editing of the mobile version could bump that way up. Definitely worth checking out and keeping an eye on. ■



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BMobilized attempts to automatically convert regular websites into mobile sites.

Gibbs keeps his eyes on a lot of things in Ventura, Calif. Let him know what you see at gearhead@gibbs.com and follow him on Twitter (@quistuipater) and on Facebook (quistuipater).

Keith Shaw's
Cool Tools

THE SCOOP

D-Wings

by Rubbo International, about $8 (HomeDepot.com)

▶ **What they are:** D-Wings are small cable and cord clamps that include self-adhesive backing to stick onto furniture or walls. The clamps come in a package of 12 small clamps (3/8-inch/9mm) and six larger clamps (1/2-inch/12mm).

▶ **Why they're cool:** For people with lots of cables and cords cluttering up a tabletop, desktop or hanging off a desk, these can provide some better organization and prevent people from tripping over or accidentally unplugging the cords. If you have a "rat's nest" of different cables (connecting to devices or power outlets), you can clean up your space easily with these.

▶ **Grade ★★★★ (out of five).**

GADGETS

Seagate adds social backup to external drives

THE SCOOP

Backup Plus external storage drives

by Seagate, about $140 (for 1TB capacity)

▶ **What it is:** Storage vendor Seagate has moved away from the GoFlex branding on its external storage drives, moving instead to a "brandless" line of products with more descriptive titles: The "Backup Plus" device basically does what it says — it provides backup for data stored on your Macintosh or PC — and the "Plus" is some additional features found on its Seagate Dashboard software. The GoFlex adapters still exist, letting users choose the adapter type depending on the ports they have on their computers, and allowing for flexible upgradeability. For example, this version features a USB 3.0 cable, but FireWire 800 and Thunderbolt adapters are also available.

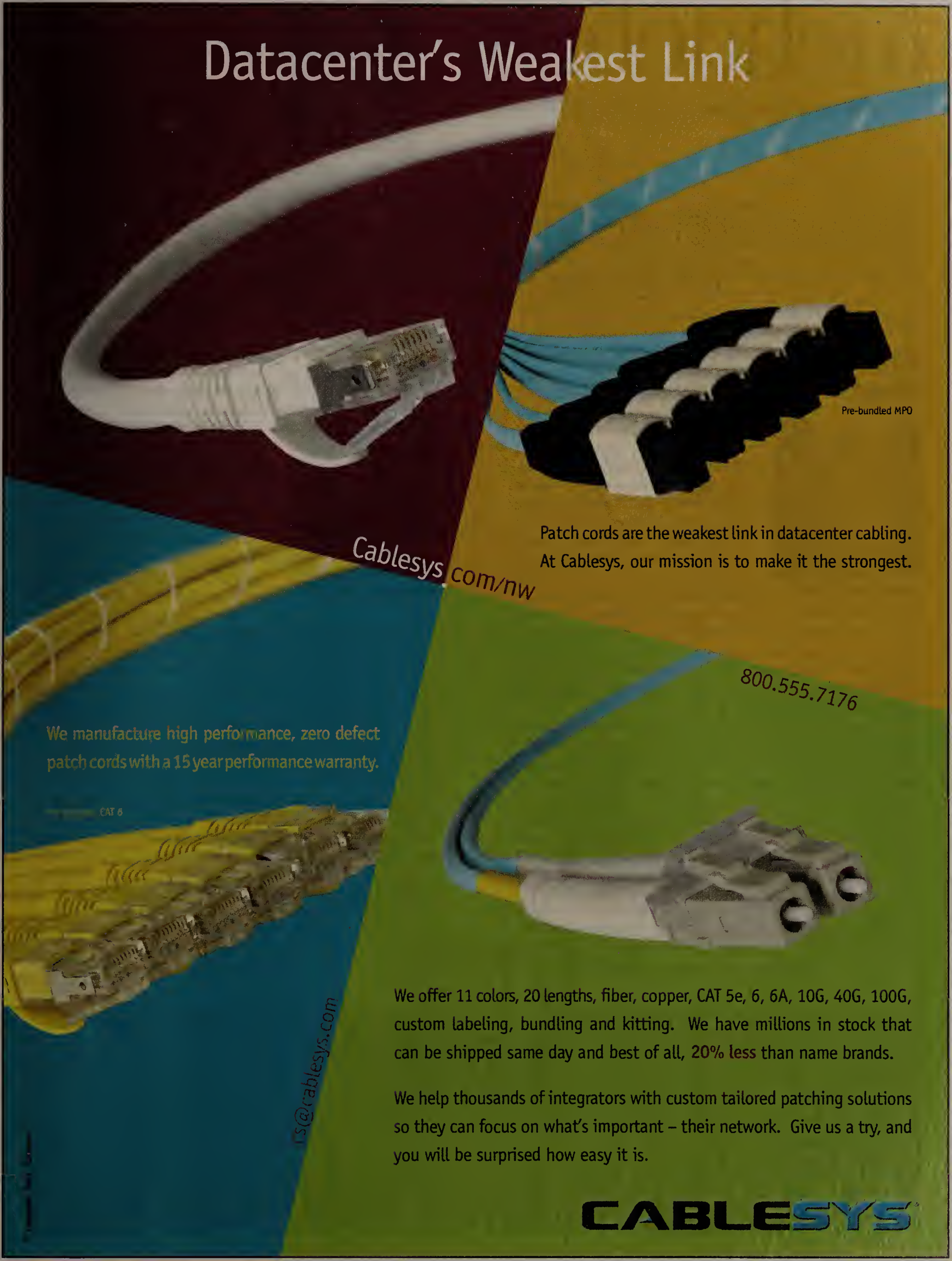
Capacities of 500GB ($120) and 750GB ($130) are also available; Desktop versions will feature drives of 1TB ($130), 2TB ($150), 3TB ($180) and 4TB ($250).

▶ **Why it's cool:** The biggest "plus" is social network integration on the included software — users can back up their photos and videos from Facebook and Flickr, to either their computers or the external drive directly. Seagate has recognized that more users are uploading photos and videos to these social sites directly from their mobile devices instead of going through the computer. The software provides users with a quick and easy way to download that content onto a storage drive.

▶ **Some caveats:** The Seagate Dashboard software isn't fully baked yet; I had some initial failures trying to download content from my Facebook account, and needed to do some login workarounds in order to download Flickr (owned by Yahoo) photos. Recent software updates seemed to have solved those issues. While you can use the software to upload to YouTube, it would be nice to have download capability too. The good part is that the software works without the external drive needing to be connected, so you can install the software and back up social content directly to your computer.

▶ **Grade ★★★★**

Shaw can be reached at kshaw@nww.com. Follow him on Twitter: @shawkeith.



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Dictate the mobile device or let the user decide?

BYOD is a minefield

Robert Rhodes, CIO of Houston Healthcare

THE BRING-YOUR-OWN-DEVICE (BYOD) REVOLUTION SEEMS to be in full swing. Although I believe this is a trend that IT professionals should eventually embrace, it is necessary for IT pros to set some ground rules. These ground rules should consider topics such as which types of mobile devices will be allowed and how these devices can be used. Without ground rules we will introduce excessive, undue risk to everyone involved. In fact, we may also introduce cultural changes that neither employers nor employees anticipate.

Mobile devices are one of the biggest risks IT professionals have to deal with. Laptops, iPads, smartphones and other mobile devices are a challenge on a good day, but trying to deal with various types of devices you don't own makes things much harder.

The possibility of unknown or unfamiliar operating systems, unknown patching status, and other unknown vulnerabilities quite frankly scares me more than a zombie apocalypse. And not knowing what antivirus, encryption and password requirements are on these devices keeps me up at night.

The lack of device standards and ownership is the real problem. I realize organizations can make users sign agreements that give us permission to manage, or partially manage, a user's personal device. But let's face it, users do not have the same security mind-set as IT security professionals.

Imagine a scenario where a user loses a personal BYOD device and doesn't report it because they don't want you to wipe it in case it turns up. It's not that this user is unconcerned about information security, it's just that they took pictures of their new baby and haven't had a chance to upload them to their PC. All you can hope is the device is at their home and not on the bus they just got off.

Unfortunately, this type of thing is common. Working in the healthcare industry, I am aware of stories of employees leaving sensitive data on public transportation or data being stolen from vehicles. Sometimes these stories end in federal fines. In my opinion, business use of personal devices would give employees in this situation more incentive to not report or to delay reporting the lost or stolen device.

▶ *See* **Rhodes,** *page 25*

Allow BYOD?

Leave it up to the user

Risk is too great

Cast your vote and see comments at tinyurl.com/cljz55u

Empower the user

Evan Kaplan, CEO of iPass

COMMUNICATION IS GOING MOBILE, WITH employees no longer chained to their desks or anchored by 9 to 5 schedules, and it is best to let workers pick the tool that will magnify their efforts in this new world. It's a fool's game to dictate what mobile devices your employees use, and one that requires more support in the end as the more you say "no" the less secure the organization becomes.

Untying conventional binds has enabled employees to act faster and be more responsive and more productive. As a result, the millennial workforce is a master of digital technology and relentless seekers of productivity.

Bring-your-own-device (BYOD) programs are essential for these mobile workers, who are big consumers of mobile technology and carry, on average, 3.5 devices. As the iPass Mobile Workforce Report shows (see tinyurl.com/8a9avwa), 91% of mobile workers today use their smartphones for work, and tablet ownership in this group has rapidly grown to 72% since the launch of the iPad. What's more, the boundary between their work and personal life is permeable, and they put an average of 50 hours per week into their work roles.

Mobile employees aren't just the senior executives, but a workforce that spans generations and is not defined by age or sex but by needs. In fact, these workers are the talent that progressive companies want to acquire, and BYOD programs help lure and retain them.

Forward-thinking IT departments recognize the shift and haven't just adapted to mobile, they have redesigned the systems and processes to make mobile their primary goal. Mobile is forcing the evolution from tightly coupled command-and-control based IT services to "cafeteria" options best fit for maximizing productivity.

However, IT can still control the data and provide security and access with a tight menu of evolving services tied to operating systems that workers can adopt — especially as more applications move to the cloud. From device security, data availability and access methods, IT can sanction BYOD as a policy without giving up control or negating responsibilities.

IT has the right to set guidelines around BYOD

▶ *See* **Kaplan,** *page 25*

THE POSSIBILITY OF UNKNOWN OR UNFAMILIAR OPERATING SYSTEMS, UNKNOWN PATCHING STATUS AND OTHER UNKNOWN VULNERABILITIES ... SCARES ME MORE THAN A ZOMBIE APOCALYPSE.

▸ **Rhodes,** *from page 24*

There are a slew of other problems with allowing users to decide what device they will use, and some are bad for users while others raise issues for organizations to deal with. For example, issues such as privacy concerns and work and life balance are topics that should concern all of us.

Consider the scenario where your employer is managing or partially managing your personal smartphone via a mobile device management (MDM) application. Many of these applications allow for GPS logging of managed devices. So imagine your surprise when your boss asks why you spend so much time at the local bar.

Many employers are, in fact, taking an increased interest in the personal behavior of their employees. I know of many healthcare employers who are now refusing to hire smokers because they add an increased cost in terms of sick days, health insurance and lost productivity. Are employees really ready to be tethered to employers like this?

Don't get me wrong, I believe BYOD will eventually be the norm for most of us; however, there are limits and issues to consider before we move too far, too fast. Even when IT pros understand the equipment in the environment and the vulnerabilities they possess, we have a difficult job. To move forward with the BYOD revolution safely, organizations must set standards that dictate what kinds of devices can be used and how they will be managed.

There must also be clear and consistent user accountability when using these devices. In addition, we should all go into this knowing the pros and cons of how this strategy will affect us beyond the direct IT security concerns. With all that in place, we may have a fighting chance of making this work. Without it, we will surely be seeing even more breach stories on the nightly news. ■

Houston Healthcare is proud to serve the medical needs of residents in Warner Robins, Centerville, Perry and Houston County, Ga., as the county's largest healthcare provider for 50 years.

Send Debate Suggestions to jdix@nww.com

▸ **Kaplan,** *from page 24*

in the workplace, as well as the right to monitor and track usage against those guidelines. By enabling people to access data, applications and corporate networks using personal devices, IT is keeping employees fast, productive and efficient — exactly how today's millennials work.

The tightly coupled command-and-control model that existed previously for IT with desktops and laptops is fraying at the edges. It's a myth that laptops are secure; they are arguably more vulnerable than the simpler mobile devices available today. Lost laptops alone cost nearly $4 billion in 2010, according to an Intel study, and software to "secure" each corporate laptop adds hundreds of dollars to the price tag.

Today's mobile devices are arguably a lot less vulnerable than most laptops and are built from the ground up with more security forethought than the older PC based operating systems, including features like remote wipe, lockout and location built directly into the OS.

Yes, BYOD is more than just a device liability problem; there are data and cost issues that need to be addressed. There is the potential for data usage "bill shock" and roaming bills can be egregious. Devices are cheap, it's the networks that are expensive, and wireless costs will rise as mobile application use escalates. All the while the new applications need connectivity like we need oxygen.

IT has long struggled with effective control of mobile- and travel-related connectivity expenses and attempts to centralize the costs have met with limited success. The emerging mobile IT model to "sponsor" services tied to company policy and guidelines and enable the employees to opt in is starting to gain acceptance. Enterprise CIOs are already forming mobile IT teams that are working with IT vendors and services companies to support a mobility strategy that gets them there.

The point is that mobility isn't just a special use case anymore; it has become the norm for most employees, and organizations that embrace BYOD will get the most bang by enabling the workers to pick the tool that they believe best fits their need. ■

iPass strives to put the world on Wi-Fi with the world's largest commercial Wi-Fi network and trusted connectivity platform. Founded in 1996, iPass is a leading provider of mobility services for both enterprise and telecom service providers worldwide.

You can do both

I think that you can do both to a certain degree as long as the users' BYOD doesn't compromise/corrupt the LAN/WAN. But whatever the decision is, you're still going to need to set parameters, rules and/or policies. You're going to need to have mandatory company software for a smooth and trouble-free sync into the LAN/WAN. **JIM WILD**

BYOD: Like 'The Dark Knight'

There are other considerations factored in, compatibility or connectivity issues aside. Remember "The Dark Knight"? Regardless, if any mobile communication support goes awry, or suddenly becomes a bane, not a benefit, hopefully the CIO becomes the Lucius Fox that just easily comes in, types his name in and closes down everything after he's done. **MYTHJEN TRIAS**

UBUNTU 12.04

Ubuntu targets the mainstream

Canonical adds 5-year support, improved interface and slick deployment tools to OS

BY TOM HENDERSON

With Ubuntu 12.04, Canonical has delivered a much improved product that spans desktops, servers and the cloud in a bid to become the cross-platform mainstream product that Apple's Mac OS might have been had Apple not abandoned the server market.

Dubbed Precise Pangolin (an anteater-like mammal), the latest version of Ubuntu sports a new feature called "machine as a service," or MaaS, which allows network admins to quickly distribute the operating system to desktops, servers or cloud resources.

There are two basic ports for Ubuntu 12.04, a 32-bit and a 64-bit. There are also variants for 32-bit ARM processors.

Despite the ARM support, 12.04 is somewhat experimental on tablets, as OEM hardware makers are required to work directly with Canonical. Few Ubuntu ARM-based tablets have been seen in the wild and none were officially released at the time of our testing. Our port of Ubuntu onto a zombie HP tablet was as simple as the last time we tried it. We've also seen demos of Ubuntu smartphones, but could find no U.S.-based samples running even the beta of Ubuntu 12.04.

Unity interface evolves

The Unity interface, which Gnome users love to hate, has improved a step or two. Unity now strongly features Ubuntu One personal cloud resources, and we were only mildly miffed that it took four authentications to play a music sample from the Ubuntu One media store.

Those running Ubuntu 10.04+ and Linux Mint 10+ will find that an upgrade installation isn't difficult. Just remember that if you're already joyously happy with your current user interface (especially Gnome), Unity will likely be installed right on top of that favored user interface if you're not careful; a fresh, bare-metal installation with subsequent restoration is recommended. But we feel Unity has evolved to the point where there's not much difference between a skinned Unity UI and one from KDE or Gnome.

Even more changes were found in Ubuntu server cloud support, which has seemingly waffled between support for Eucalyptus stacks, then Puppet and Chef, and now leans towards Juju, MaaS and OpenStack as its cloud-control infrastructure. Ubuntu is strongly intertwined in the OpenStack spec, and Ubuntu's 12.04 LTS version will have five years of Long Term Support, in contrast with prior LTS versions, which had two.

CLEAR CHOICE TEST

Nonscientific measurements of performance showed us that the 12.04 client has slightly better user experience graphics performance, and we can vouch for slightly faster disk performance. Ubuntu 12.04 uses the 3.2.0.24 Linux kernel, where power settings now work and depending on BIOS and machine support, power consumption can be tailored to a fine degree.

The server edition comes ready to distribute or replicate. Our initial downloaded ISO cut of the 12.04 Server edition started an initial installation of Precise Pangolin Server that booted in seconds to a screen allowing MaaS distribution. Juju, a package distributor and configuration app, then seeded the resulting server instances with pre-configured application payloads — unless we distributed pre-configured server instances en MaaS, so to speak.

The MaaS package selection creates an Ubuntu Server instance infrastructure that can then (somewhat rapidly) provision a master server to be used (via PxE boot or initial boot-time access to the MaaS server) to provision large quantities of servers. Building the master server is blissfully simple and several different master-type instances can be built, virtualized, and brought into play to distribute multiple servers via DHCP rapidly after the master server "cut."

We chose from Ubuntu Server's initial installation menus to create a MAAS/MaaS server, then chose to create an optional encrypted home directory. We were asked if we wanted to partition the disk and set up optional LVM (Linux Virtual Machine infrastructure) or optional encrypted LVM infrastructure or just do the base setup manually. If you don't need the containers that LVM provides, or have other plans, skip LVM.

We were then given the choice of the encryption seed (with a verification) to use. There is no recovery or decryption without the chosen seed, we found. You can choose insanely long seeds; the longer the seed, the tougher the encryption.

We then set up an HTTP proxy so that we could allow MaaS system controlled access to internal or external network resources. We could then tell the MaaS system how to get updates automatically, manage it externally (or with the Landscape application Canonical prefers), or prevent updates from the Internet or proxy source we'd entered.

Sparse instances could be brought up in as little as a minute, 20 virtualized instances at a time. Better times could be achieved with faster CPUs, more optimized (e.g. smaller payload) instances, and by running multiple concurrent MaaS servers.

Initial product loads using MaaS then required a boatload of automated updates, something we find frustrating with Canonical. Each version has an initial load, and then, even on release day, has a truckload of updates needed to bring it current, which all must be downloaded then installed.

The upside to the MaaS system is that administrators can "version" instances after the initial update exercise, then have a patch-level confidence among the MaaS master server versions. Waltzing around the update step would prove desirable when many virtualized instances must be brought up for non-persistent use, ostensibly with Juju-serviced pre-configured application payloads.

Canonical has placed large emphasis on Ubuntu's LVM compatibility, but also is touted to work admirably on Xen, Citrix XenServer, VMware, and is said to be newly optimized for Microsoft's Hyper-V. The optimization for working with hypervisors generally means special, para-virtualized device drivers enabled between a virtualized operating system instance and the hypervisor. Tests performed on an HP ProLiant DL580 16-core server showed that Ubuntu performance with SPECjbb was essentially the same, with or without Microsoft's Hyper-V 2.1 hypervisor, so the optimizations were judged very good.

Ubuntu 12.04 features many iterative improvements. Canonical is sticking with Unity as its UI, but the issue is rapidly becoming moot as Canonical assuages even hardcore Gnome and KDE users. And like Microsoft and Apple, the UI "branding" becomes important across targeted devices.

But we liked the server updates even more, and if you enjoy cloud, Ubuntu is the one to beat. This fact is likely to become even stronger as Ubuntu has made replicating and installing Ubuntu easier still. ■

Henderson is principal researcher for ExtremeLabs, of Bloomington Ind. He can be reached at kitchen-sink@extremelabs.com.

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Coo summe gadget guid

Hit the **ROAD**, **BEACH** or the **HOTEL** with these outstanding outdoor gadgets

By Keith Shaw

ILLUSTRATION: AUGUSTO COSTANZO

IT'S TIME TO GET OUT OF THE OFFICE and into the great outdoors. If you're a summer-time kind of person, then you probably have some vacation time planned for the next three months, but that doesn't mean your love of gadgets and technology needs to stay indoors. Here are some suggestions for some great summer gadgets for work, travel, outdoors and exercise that will get you more enjoyment out of the summer season.

outdoor gear

Eton Rukus Solar speaker

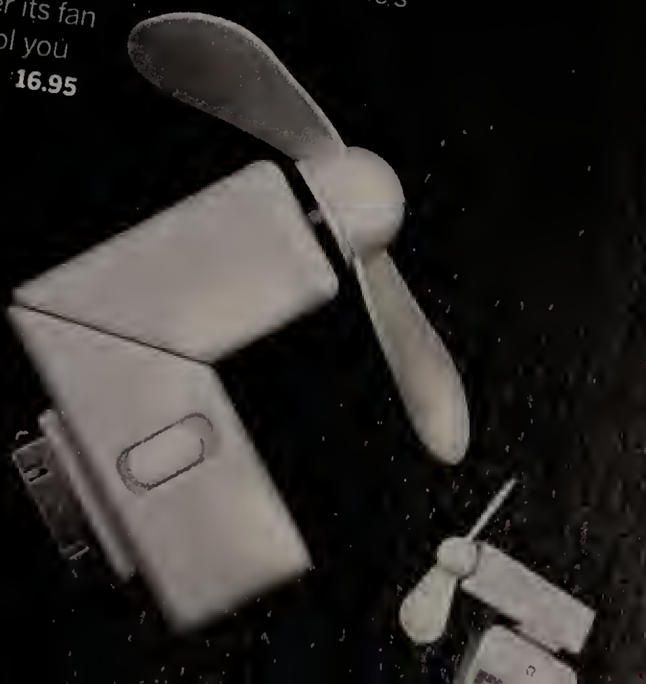
For listening to tunes while outside camping, at the beach or just in your backyard, this portable Bluetooth speaker system includes a solar panel for powering the system. **$140**

Magellan eXplorist 110 GPS receiver

For hiking, fishing, geocaching, camping or other activities where you might get lost without being near a road, this receiver includes a transflective color screen (no glare), and also offers water features, urban and rural land use, city centers as well as a complete road map of the U.S., Canada, Western Europe and Australia. Accurate within 10-15 feet, the device is powered by two AA batteries for up to 18 hours of usage. **$129.99**

iPhone Fan

There's nothing more annoying than having to use your iPhone outdoors on a hot day and not being able to cool yourself. Now you can, with this clip-on attachment that draws a little bit of power from the iPhone's power dock to power its fan to cool you down. **16.95**



Grace Digital Audio Eco Terra

The "world's first 100% waterproof boombox," this system provides rugged protection for your mobile device, as well as for keys and other personal items. The design is water- and dirt-resistant, while letting you control iPhone/iPod functions while they are inside the case. The unit is fully submersible, and floats as well. **$149.99**

STHANZ.

fitness

Cool Point

A thin, lightweight, cooling gel pack that fits in the palm of your hand, letting you get a longer workout, tolerance for a heavier workload, shorter recovery time and overall better exercise experience. **$19.99**

TabletTail by Octa

This tablet holder lets you hold your tablet or e-reader at any angle, while giving you the convenience of carrying it easily. A vacuum dock piece suctions itself to the device for a secure fit, and the second piece, the "whale tail," lets you flex it to provide portrait or landscape orientations. The "fins" of the tail provide a secure stand for placing on any surface, including rocks and sand. **$49.95**

Surf-Grip

This foam paddle with a handle lets body surfers increase their buoyancy and provides an alternative to body boards or surf boards. **$15**

AfterShokz Mobile earbuds

Run, bike or work outside without blocking out noises such as oncoming traffic, car horns, ambulances or other warning noises. AfterShokz headphones rest outside the ear, allowing for the ambient noises to be heard, but still lets users hear their music. **$69.95**

NYNE NB-200 Bluetooth speaker

Custom clips can attach this speaker to the handlebars of a bike or stroller, or can be used outdoors (water-repellent housing) to provide wireless sound from an iPod, iPhone, tablet or other Bluetooth device. Includes five hours of battery life and a built-in microphone for phone calls. **$149.95**

iHome M13 portable water-resistant stereo speakers

Aimed at kids (or adult Kermit the Frog fans), this speaker system connects to any MP3 player, securely holding it within a lightweight zippered case. Very handy for the beach, picnics or parties. **$39.99**

Therapik bug bite relief

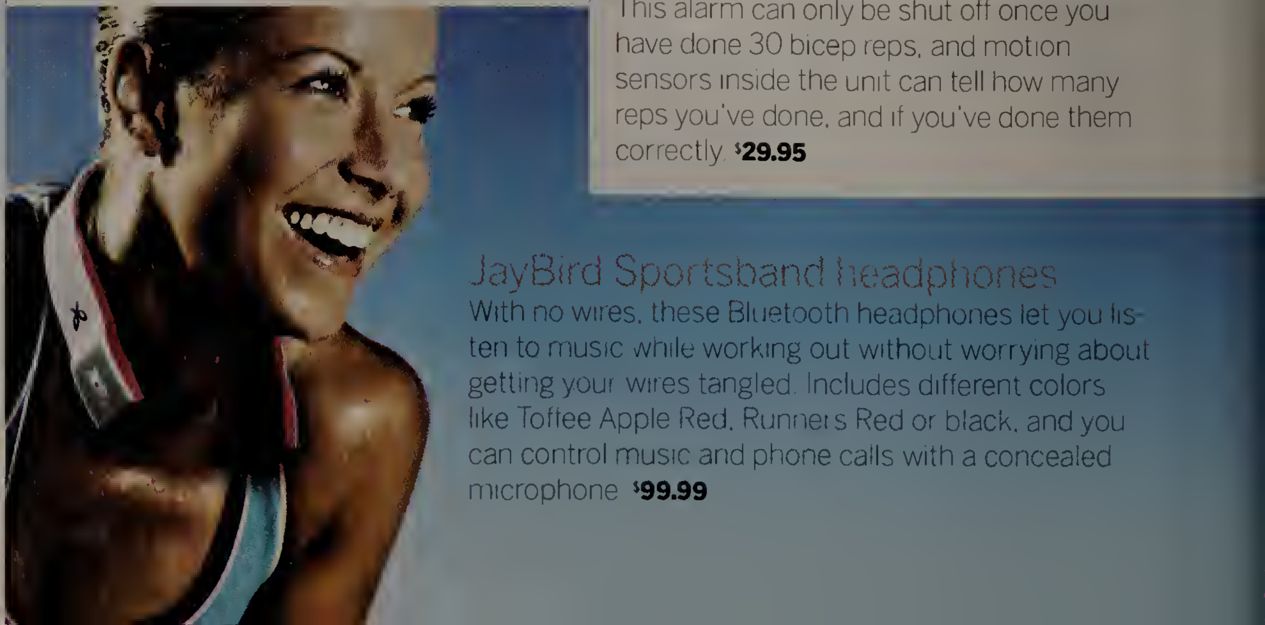
This hand-held device can deliver bug bite relief and treatment for stings and bites from mosquitoes, bees, wasps, hornets, black flies, ants, fleas, ticks, chiggers and even jellyfish and stinging nettle. FDA approved, the unit delivers heat to deactivate the venom from the insects or sea creatures, increasing blood flow to the affected area and reducing swelling, redness, itching and pain. **$12.95**

Magellan Switch Series GPS watches

The Switch and Switch Up GPS watches are geared toward runners, cyclists and other athletes. Through a Magellan website, users can analyze and share their activities. Watch includes eight hours of battery life, water resistance (up to 50 meters), compatibility with ANT+ sensors, thermometer, vibration alerts, and barometric altimeter for specific elevation data. Switch: **$249.99** (**$299.99** with heart rate monitor); Switch Up (includes multisport mount): **$299.99** (**$349.99** with heart rate monitor).

Wake Up Work Out alarm clock

I can't tell if this is awesome or sadistic. This alarm can only be shut off once you have done 30 bicep reps, and motion sensors inside the unit can tell how many reps you've done, and if you've done them correctly. **$29.95**



JayBird Sportsband headphones

With no wires, these Bluetooth headphones let you listen to music while working out without worrying about getting your wires tangled. Includes different colors like Toffee Apple Red, Runners Red or black, and you can control music and phone calls with a concealed microphone. **$99.99**

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Power-saving outlets automatically shut off power to unused devices when your computer and peripherals are turned off or on standby. Automatic voltage regulation (AVR) adjusts the under-voltages and over-voltages without using the battery. With our patent-pending AVR bypass, the transformer kicks in only when needed and automatically deactivates when power is stable. Plus, APC's highly efficient designs reduce power consumption when power is good and extend runtimes when the lights go out. Together, these power-saving features eliminate wasteful electricity drains, saving you about $40-$50 a year. And managing today's Back-UPS couldn't be easier thanks to an integrated LCD that provides diagnostic information at your fingertips.

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The award-winning Back-UPS provides reliable power protection for a range of applications: from desktops and notebook computers to wired and wireless networks to external storage. The reinvented APC Back-UPS is the trusted insurance you need to stay up and running and reliably protected from both unpredictable power and energy waste!

APC power protection products are available at: BEST BUY OfficeMax STAPLES that was easy Office DEPOT

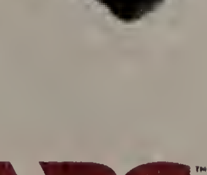
Keep your electronics up and your energy use down!

Back-UPS models are available with the features and runtime capacity that best suit your application, and many models have been designed with power-saving features to reduce costs.

The High-Performance Back-UPS Pro Series

High-performance Back-UPS Pro units deliver cost-cutting, energy-efficient features. Power-saving outlets automatically shut off power to unused devices when your computer and peripherals are turned off or on standby, eliminating costly electricity drains. *(BR700G shown above)*

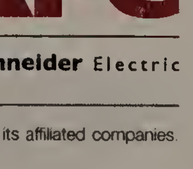
The energy-efficient ES 750G



The ES 750G boasts innovative power-saving outlets, which automatically shut off power to controlled outlets when the computer plugged into the host outlet is deemed asleep, eliminating wasteful electricity drains.

- 10 Outlets • 450 Watts / 750 VA
- 70 Minutes Maximum Runtime
- Coax and Telephone/Network Protection

The best-value ES 550G



The ES 550 uses an ultra-efficient design that consumes less power during normal operation than any other battery backup in its class, saving you money on your electricity bill.

- 8 Outlets • 330 Watts / 550 VA
- 43 Minutes Maximum Runtime
- Telephone Protection

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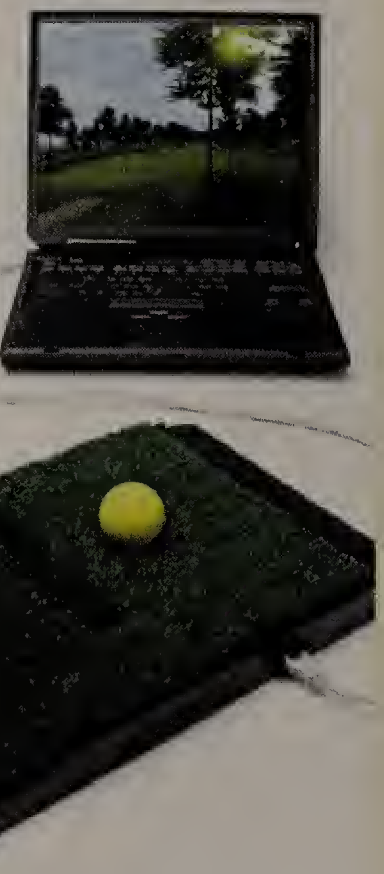
golfing



GolfLogix app

Free app features maps of more than 30,000 golf courses, providing accurate distances to numerous points throughout the hole. For a minimal fee, can also track every shot to learn club distances and shot trends. **FREE APP**

OptiShot Infrared Golf Simulator

System connects with Windows PCs via plug-and-play interface, lets you use your own clubs and up to four players to compete by hitting real balls, foam balls or no ball at all. Infrared sensors on a swing pad record the club-head speed, face angle, swing path, distance and ball flight. Includes 11 preloaded courses. **$399.95** (standard unit); **$899.95** (silver package).

travel/ car gear

Power Station Traveller

Charge up to three portable small electronic devices at the same time while at home or on the road through your car charger. Includes a carrying case and adjustable sliders to keep your devices in place during a recharge. **$32.99**

Griffin SmartTalk Solar

This hands-free Bluetooth speakerphone lets you keep your hands on the wheel and eyes on the road while talking on your cellphone. Mounts to the sun visor with the solar panel facing the glass, letting the sun power up the unit's internal battery. Motion sensors automatically connect to a paired phone as soon as you enter the vehicle, and you can connect two different phones simultaneously. **$69.99**

a computer

HP Folio 13

The latest lightweight, full-performance notebook, the HP Folio 13 boasts nine hours of battery life, a 0.70-inch profile and 3.3-pound weight with a 13.3-inch high-definition display. **Starts at $999**

2012 summer reading guide

Geeky books to get you through the summer

Packing for Mars: The Curious Science of Life in the Void

by **MARY ROACH**

While most of us likely will never travel in space, scientists worldwide are preparing for what life may be like during long space journeys. In this entertaining book, Mary Roach discusses all sorts of questions about what it's like to live in space, including the lack of privacy, the inability to smell flowers, what happens when you vomit in your helmet during a space walk, and of course, sex in space.

Physics of the Future

by **MICHIO KAKU**

If you're sick of reading about space elevators, flying cars and Internet-enabled contact lenses in your favorite science-fiction novel, pick up this book, in which theoretical physicist Michio Kaku details life in the year 2100. Kaku shows developments in computer technology, artificial intelligence, medicine, space travel and more, and how these inventions will affect the world's economy.

Soon I Will Be Invincible

by **AUSTIN GROSSMAN**

A quick read that highlights the life of a super-villain and a new superhero as they struggle with their roles and who they're really supposed to be. It's not as cut-and-dry as it appears in the comics pages — anyone who has ever read a superhero comic book will recognize the stereotypes as they're turned on their heads.

Space Chronicles: Facing the Ultimate Frontier

by **NEIL DEGRASSE TYSON**

The Internet poster boy for space exploration, famed astrophysicist Neil deGrasse Tyson discusses the future of space travel now that NASA has put human space flight on hold. This book offers "an eye-opening manifesto on the importance of space exploration for America's economy, security, and morale." Includes Tyson's insights that includes how aliens, if they exist, might be able to find humans.

Ready Player One

by **ERNEST CLINE**

If you grew up in the '80s and spent any time playing classic video games or role-playing games, or taking in that decade's movies and music, this book is a must-read. In a future world where everyone is obsessed with 1980s culture, a teenage boy embarks on a worldwide treasure hunt based in a virtual world with clues that all point back to the '80s.

Geek Dad: Awesomely Geeky Projects and Activities for Dads and Kids to Share

by **KEN DENMEAD**

Editor of the popular GeekDad blog on Wired.com, Ken Denmead offers up a book of projects for all ages that can help dads and kids create projects like a nighttime kite with lights and a video camera attached to balloons, and build a working lamp with Legos and CDs.

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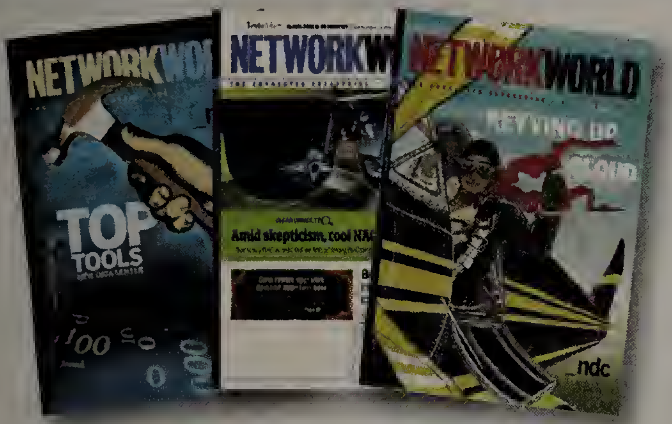

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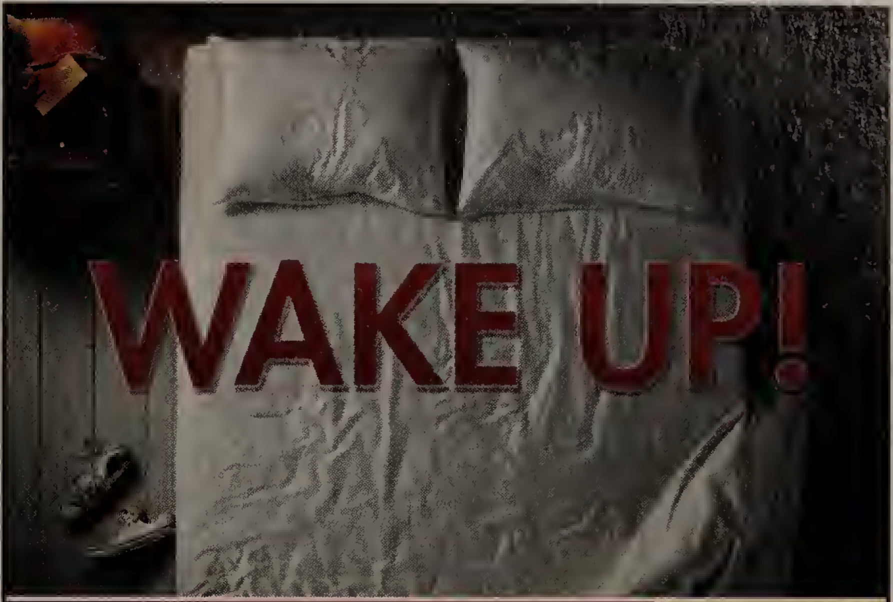

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BACKSPIN | BY MARK GIBBS

Stop! You can't sell your <fill in the blank>

YOU KNOW those routers you purchased a couple of years ago that you're going to replace next week? What are you going to do with them? Oh, you want to sell them?

Well, if those products were made abroad (and they are all produced at least in part in China and or Japan) you had better move fast because the Supreme Court of the United States (SCOTUS) is about to weigh in on how U.S. copyright law and products manufactured outside of the U.S. are related. If SCOTUS finds, as it might, that goods produced abroad cannot be resold under the United States' "first-sale doctrine," then you may need the permission of the copyright holders before your routers can be sold.

Just think about that for a second. Can you imagine what it would be like if, rather than owning the physical products you purchase, they were only licensed to you and you needed to get permission from the copyright owner to transfer ownership? This problem would apply to any product whether high-, medium- or low-tech. It would apply to your routers, your iPod, your iPad ... heck, even your coffee maker!

The first-sale doctrine was first recognized by SCOTUS in 1908 and says, according to Wikipedia, that once a copyrighted work is sold or otherwise lawfully transferred the copyright holder's "interest in the material object in which the copyrighted work is embodied is exhausted. The owner of the material object can then dispose of it as he sees fit. Thus, one who buys a copy of a book is entitled to resell it, rent it, give it away, or destroy it. However, the owner of the copy of the book will not be able to make new copies of the book because the first sale doctrine does not limit copyright owner's reproduction right."

Wikipedia goes on to point out that, "Without the doctrine, a possessor of a copy of a copyrighted work would have to negotiate with the copyright owner every time he wished to dispose of his copy. After the initial transfer of ownership of a legal copy of a copyrighted work, the first sale doctrine exhausts copyright holder's right to control how ownership of that copy can be disposed of."

That was all well and good except that in 2010 SCOTUS effectively affirmed a lower court ruling in a case from California's 9th Circuit where Costco had, it was judged, committed copyright infringement by purchasing Omega watches from unauthorized European dealers and resold them in the U.S. at prices considerably lower than Omega's recommended U.S. pricing. What sealed the infringement deal was that Omega had a stamp on the underside of the watches that asserted its claim of copyright.

Unfortunately, SCOTUS deadlocked on Costco v. Omega which means that, while SCOTUS didn't overturn the 9th Court, it also didn't affirm the decision, and thus the forthcoming hearing is hugely important. So, if SCOTUS decides that first-sale doctrine doesn't apply to products made outside of the U.S. and the copyright holder gets feisty, you'll have to get permission to resell that old router ... or your old iPod, iPhone, iPad, PC or car.

If you think this matters, then sign the petition at Demand Progress ... you have only your rights to lose. ■

Gibbs is looking out for your rights in Ventura, Calif. Try to sell your old router at backspin@gibbs.com and follow him on Twitter (@ quistuipater) and on Facebook (quistuipater).

NETBUZZ | BY PAUL MCNAMARA

Snopes.com debunks old C++ hoax, but ...

FOR ANYONE bearing the brunt of an Internet hoax that just won't die, there's little more to hope for in terms of potential relief than a story on Snopes.com stating unequivocally that the hoax is indeed a hoax. After all, Snopes is the gold standard when it comes to debunking nonsense.

Computer scientist Bjarne Stroustrup recently received that maximum measure of support. Yet the man who designed C++ — first released commercially in 1985 — remains resigned to the fact that a fictitious interview he did not give in 1998 about nefarious motivations he did not have for developing the programming language will nonetheless continue to provide him genuine irritation.

He's right, of course, and we'll get to his reasoning in a moment.

Here's the background for those unfamiliar with the tale: On June 6, Snopes published its findings about the claim that "C++ designer Bjarne Stroustrup admitted in an interview that he developed the language solely to create high-paying jobs for programmers."

The Snopes verdict: false.

Here's an example of the charge Snopes unearthed from an August 2009 email: "I just ran across a 'leaked' interview with programming language C++ author Bjarne Stroustrup where he clames [sic] to have developed C++ for the express intent of creating a demand for programmers after IBM swamped the market with C programmers in the 90's. Basically I am asking if there is any truth to this. If so this guy duped an entire industry."

There isn't and he didn't. As the bogus legend goes, Stroustrup was interviewed in 1998 by the IEEE's *Computer* magazine, which opted not to publish the most incendiary passages "for the good of the industry."

If you'd like to read those fictitious passages, there are excerpts available in this Buzzblog post — tinyurl.com/86t2hwg — and the entire work can be found within the Snopes article that brands it a fake: tinyurl.com/23tq9d3. I found it interesting reading primarily because the "interview" was so over-the-top as to call into question why anyone would possibly think it real. Yet they do ... to this day.

So back to what Stroustrup thinks about Snopes taking up his cause. His website includes a couple of warnings to would-be correspondents that they should not hold their breath awaiting a prompt reply — "I get a lot of email" — yet he needed less than an hour to answer my inquiry. It's clear this indignity has gotten under his skin.

"This hoax has been doing the rounds for about a decade. It seems that several times every year someone (usually someone who dislikes C++ for some reason) finds it funny and re-posts it somewhere," Stroustrup says. "By now, I'm a bit tired of it."

I told him I found it difficult to fathom that people actually believe he said the things he didn't say.

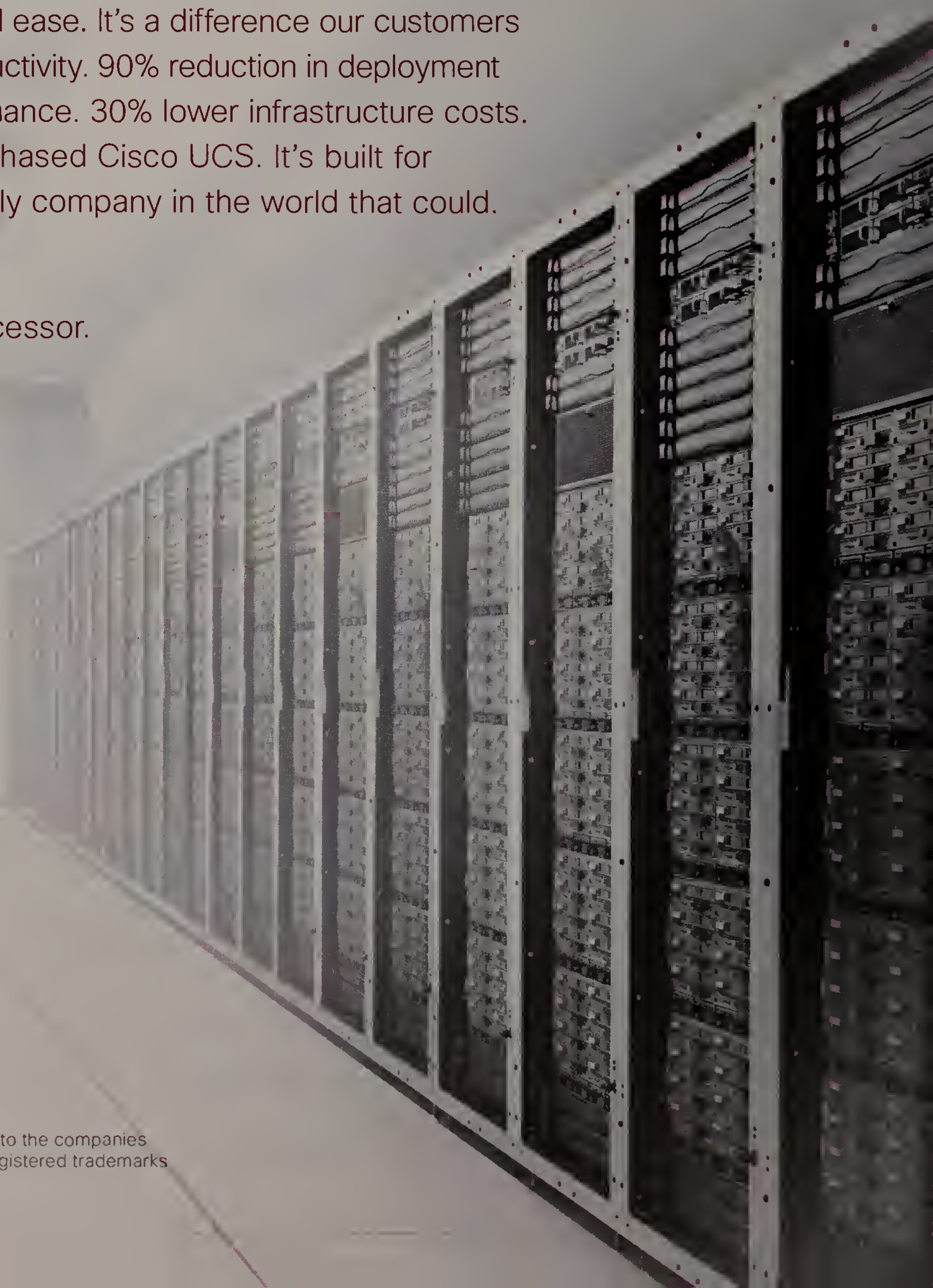
"Yes, it is amazing. But every year I get several emails asking me to confirm it or say that it is wrong. It's a FAQ :-)"

He means that literally, too, as in it's listed among the FAQs on his website.

So does he anticipate that the Snopes debunking will do any good?

"Not really. The main effect will probably be to add one more source of the 'interview.'" ■

Know of a similarly frustrating tale? The address is buzz@nww.com.



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